Supreme Court, U. S.
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Appendix

IN THE

Supreme Court of the United States

OCTOBER TERM, 1976

No. 76-528

CONSUMERS POWER COMPANY, *Petitioner,*

v.

NELSON AESCHLIMAN, SAGINAW VALLEY NUCLEAR STUDY GROUP, *et al., Respondents.*

On Petition for a Writ of Certiorari to the United States Court of Appeals for the District of Columbia Circuit

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TABLE OF CONTENTS

Page

Aeschliman v. *Nuclear Regulatory Comm.*, —— F.2d ——, Nos. 73-1776, 73-1867 (D.C. Cir. July 21, 1976) 1

Natural Resources Defense Council v. *NRC*, —— F.2d ——, Nos. 74-1385, 74-1586 (D.C. Cir. July 21 1976) 25

Vermont Yankee Nuclear Power Corporation (Vermont Yankee Nuclear Power Station), ALAB-56, 4 AEC 930 (June 6, 1972) 85

Consumers Power Company (Midland Plant, Units 1 & 2), ALAB-60, 5 AEC 261 (July 19, 1972) .. 103

Consumers Power Company (Midland Plant, Units 1 & 2), LBP-72-34, 5 AEC 214 (December 14, 1972) 114

Consumers Power Company (Midland Plant, Units 1 & 2), ALAB-101, 6 AEC 60 (February 20, 1973) 153

Consumers Power Company (Midland Plant, Units 1 & 2), ALAB-106, 6 AEC 182 (March 26, 1973) . 171

Consumers Power Company (Midland Plant, Units 1 & 2), ALAB-123, 6 AEC 331 (May 18, 1973) .. 184

Niagara Mohawk Power Corporation (Nine Mile Point, Unit 2), CLI-73-28, 6 AEC 995 (November 6, 1973) 252

Consumers Power Company (Midland Plant, Units 1 & 2), ALAB-160, 6 AEC 1002 (November 26, 1973) 254

Consumers Power Company (Midland Plant, Units 1 & 2), CLI-74-5, 7 AEC 19 (January 24, 1974) .. 257

Consumers Power Company (Midland Plant, Units 1 & 2), CLI-74-7, 7 AEC 147 (February 5, 1974) .. 279

Consumers Power Company (Midland Plant, Units 1 & 2), CLI-74-8, 7 AEC 149 (February 20, 1974) . 281

Consumers Power Company (Midland Plant, Units 1 & 2), CLI-74-15, 7 AEC 311 (April 11, 1974) .. 283

Potomac Electric Power Company (Douglas Point Nuclear Generating Station, Units 1 & 2), ALAB-218, 8 AEC 79, July 15, 1974 285

Page

Atomic Energy Commission, Environmental Effects of the Uranium Fuel Cycle, Notice of Proposed Rule Making, 37 Fed. Reg. 24191 (Nov. 15, 1972) . 303
Atomic Energy Commission, Environmental Effects of the Uranium Fuel Cycle, General Statement of Policy, 41 Fed. Reg. 34707 (Aug. 16, 1976) 313
Chapter I—Atomic Energy Commission, Part 50—Licensing of Production and Utilization Facilities, Environmental Effects of the Uranium Fuel Cycle, 39 Fed. Reg. 14188 (April 22, 1974) 322
Atomic Energy Act of 1954, 41 U.S.C. §§ 2011 *et seq.* . 340
Energy Reorganization Act of 1974, 42 U.S.C. §§ 5801 *et seq.* 373
National Environmental Policy Act of 1969, 41 U.S.C. § 4332 386

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United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 73-1776

NELSON AESCHLIMAN, ET AL., PETITIONERS

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION AND UNITED STATES OF AMERICA, RESPONDENTS

CONSUMERS POWER CO., A MICHIGAN CORP., INTERVENOR

No. 73-1867

SAGINAW VALLEY NUCLEAR STUDY GROUP, UNITED AUTO WORKERS INTERNATIONAL, CITIZENS COMMITTEE FOR ENVIRONMENTAL PROTECTION OF MICHIGAN, WEST MICHIGAN ENVIRONMENTAL ACTION COUNCIL, INC., SIERRA CLUB AND UNIVERSITY OF MICHIGAN ENVIRONMENTAL LAW SOCIETY, PETITIONERS

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION AND UNITED STATES OF AMERICA, RESPONDENTS

CONSUMERS POWER COMPANY, INTERVENOR

Petitions for Review of Orders of the Nuclear Regulatory Comission

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Argued November 27, 1974

Decided July 21, 1976

Myron M. Cherry, with whom *Robert L. Graham*, was on the brief for petitioners in No. 73-1867 argued for all petitioners.

James L. Kelley, Attorney, Nuclear Regulatory Commission, with whom *Wallace H. Johnson*, Assistant Attorney General, *Marcus A. Rowden*, General Counsel, Nuclear Regulatory Commission, *Raymond M. Zimmet*, Assistant to the Solicitor, Nuclear Regulatory Commission. *Edmund B. Clark*, *Jacques B. Gelin* and *Lawrence E. Shearer*, Attorneys, Department of Justice, were on the brief for respondents.

Harold F. Reis, with whom *J. A. Bouknight, Jr.*, was on the brief for intervenor Consumer Power Company.

Howard J. Vogel, was on the brief for petitioners in No. 73-1776.

William H. Ward, filed a brief on behalf of the State of Kansas as *amicus curiae* urging reversal.

Before: BAZELON, *Chief Judge*, FAHY, *Senior Circuit Judge* and JUSTICE,* *United States District Judge* for the Eastern District of Texas

Opinion for the Court filed by *Chief Judge* BAZELON.

BAZELON, *Chief Judge*: These cases involve consolidated petitions for review of orders of the U.S. Atomic Energy Commission granting construction permits for two pressurized water nuclear reactors to generate electricity and steam.[1]

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* Sitting by designation pursuant to 28 U.S.C. § 292(d).

[1] Under the Energy Reorganization Act of 1974, Pub. L. No. 93-438, 88 Stat. 1233, 42 U.S.C. § 5801 *et seq.* (Supp. IV, 1974), the licensing and related regulatory functions of the AEC were transferred to the U.S. Nuclear Regulatory Commission [NRC]; the Energy Research and Development Administration [ERDA] assumed responsibility for the operation of government nuclear research and production facilities. 42 U.S.C. §§ 5841(f), 5842, 5814(c) (Supp. IV, 1974). We employ the term "Commission" to refer to both AEC and its regulatory successor, NRC.

The applicant, Consumers Power Company [Consumers] made its initial application in January, 1969, under the Atomic Energy Act of 1954, as amended, 42 U.S.C. §§ 2133, 2232, 2235, and 2239. Consumers' own system is the primary customer of electricity, while the adjacent facility of the Dow Chemical Company [Dow] was the intended customer of the output of process steam. Location of the twin reactors in Midland, Michigan, across the Tittabawassee River from Dow was dictated, in part, by the fact that steam does not efficiently retain heat over long travels.

Petitioner Aeschliman and five other residents of nearby Mapleton, Michigan, constituting the Mapleton Intervenors, opposed grant of the permits. Similarly in opposition were petitioning organizations, Saginaw Valley Nuclear Study Group, a local not-for-profit environmental organization, et al. [Saginaw].

As required by 42 U.S.C. §§ 2039, 2232(b), the application was referred to the Advisory Committee on Reactor Safeguards [ACRS], and to the Commission staff. In 1970, both ACRS and the staff preliminarily concluded that the facility comported with the Atomic Energy Act's public health and safety standards.

After notice and hearings,[2] a three-member Atomic

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[2] Seventeen days of hearings were held regarding health and safety issues. Dow and a local civic organization intervened on behalf of the application; the Mapleton and Saginaw intervenors opposed it. Under then-prevailing Commission rules, environmental issues did not have to be considered in a construction permit hearing, and were excluded. On the final day of hearings, this court decided *Calvert Cliffs' Coordinating Committee, Inc.* v. *AEC*, 499 F.2d 1109 (D.C. Cir. 1971),

Safety and Licensing Board issued a lengthy decision authorizing issuance of construction permits. Mapleton and Saginaw intervenors filed exceptions with the Atomic Safety and Licensing Appeal Board. Upon review, the Appeal Board affirmed in all respects, but attached conditions concerning the applicant's "quality assurance" program.[3]

Following the filing of petitions for review, motions seeking reconsideration on various grounds were made and denied.[4]

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striking down the Commission regulations governing treatment of NEPA issues. Thereafter, the Commission revised its environmental review regulations, and in January, 1972, issued its draft environmental impact statement on the Midland facility. Comments were solicited from federal agencies, groups in the vicinity of the proposed site, and the public. A final environmental impact statement followed in March, 1972. Fourteen days of public hearings on environmental issues were conducted in May and June, 1972. Saginaw did not participate in these latter hearings, but both Mapleton and Saginaw did submit proposed findings of fact and conclusions of law.

[3] The terms "quality assurance" and "quality control" are terms of art defined by 10 C.F.R., Part 50, App. B:

> '[Q]uality assurance' comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service. Quality assurance includes quality control, which comprises those quality assurance actions related to the physical characteristics of a material, structure, component, or system which provides a means to control the quality of the material, structure, component, or system to predetermined requirements.

[4] These cases have been long delayed. The last decision on the merits by the Appeal Board was rendered May 18, 1973. On July 10, 1973, the Commission declined review. *See* 10 C.F.R. § 2.785(d)(1) (1975). The petitions for review were filed August 6, 1973. On November 6, 1973, the Commission declared a major change in policy regarding energy conserva-

I

A.

Saginaw argues the Environmental Impact Statement [EIS] for construction of the Midland reactors did not adequately consider "alternatives to the proposed action" as required by §§ 102(C)(iii) and 102(D) of the National Environmental Policy Act [NEPA], 42 U.S.C. §§ 4332(C)(iii); *id.*, (D) (1970). In particular, Saginaw asserts the EIS was fatally defective for failure to examine energy conservation as an alternative to a plant of this size. The alternatives section of the EIS discusses several non-nuclear methods of power generation, but does not consider any measures for reducing consumer demand.[5] This omission was forcefully pointed out by

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tion. Niagara Mohawk Power Corp., RAI-73-11, 995. Petitioners sought clarification by the Commission of the impact of *Niagara* on parallel contentions in their case. This court delayed briefing to permit resolution of that question, and finally ordered the Commission to respond to petitioner's request. The Commission refused to reopen on January 24, 1974. Petitioners made a second motion before the Commission to reopen the matter on the ground that renegotiation of the Consumers-Dow agreement substantially altered elements of the cost-benefit analysis which had permitted construction. That motion was denied on February 5, 1974, and a third, which the Commission deems cumulative with the second, was denied on February 20, 1974. On April 11, 1974, after calling for all relevant contracts, the Commission again affirmed its decisions not to reopen for changed circumstances, noting that Dow still intended substantial takes of electricity and steam, and intended to maintain their fossil-fuel facilities, "primarily on a stand-by basis." These cases were argued together on November 27, 1974. On April 8, 1975, this court entered an order holding them in abeyance pending the decision in NRDC v. NRC, Nos. 74-1385, 74-1586 (D.C. Cir., decided today), which governs certain of the issues. See, *infra* III.

[5] III J.A. XI-1—XI-11.

Saginaw in its comments on the draft EIS.[6]

The Licensing Board rejected energy conservation alternatives as "beyond our province," stating the "real question" was which power generating technology would be superior.[7] On administrative appeal, the Licensing

[6] *See, e.g.*, III J.A. 128, ¶ 47 (promotional advertising); *id.*, 129-30, ¶ 48 (rate structure); *see also id.*, 150, ¶ 87 (air conditioner usage); *id.*, 149, ¶ 85 (generalized need to conserve energy resources).

We need not decide what the result would be if energy conservation had not been brought to the Licensing Board's attention. We note, however, that several courts have considered intervenor's comments to be one factor bearing on the reasonableness of agency discussion of alternatives. Sierra Club v. Morton, 510 F.2d 813, 826 (5th Cir. 1975); North Carolina v. FPC, —— F.2d ——, No. 74-1941 (D.C.Cir. March 24, 1976), slip op. at 9, *petition for cert. filed*, 44 U.S.L.W. 3671 (U.S., May 14, 1976) (No. 75-1657). *Cf.* Maryland-Nat. Capital Park & Planning Comm. v. U.S. Postal Service, 487 F.2d 1029, 1040 n.9 (D.C.Cir. 1973) (whether exhaustion doctrine applies to NEPA left open).

[7] The Licensing Board wrote:

> 48. Intervenors have suggested at various times that the Board must go behind the characterization of "demand" made by the Applicant to determine whether an appropriate alternative to satisfying the demand would be to set limits on particular uses of electricity. The Board declines to do so. So far as appears from the record, the postulated demand is made up of normal industrial and residential use and it is, in our view, beyond our province to inquire into whether the cusomary uses being made of electricity in our society are "proper" or "improper". The suggestion was also made that Applicant is stimulating demand by its advertising. No evidence was offered on this point and absent some evidence that Applicant is creating abnormal demand, the Board did not consider the question.

II J.A. 38.

* * * *

[Continued]

Board's decision not to explore conservation alternatives was affirmed. The Appeal Board held that conservation was implicitly considered in the cost-benefit analysis and demand projections, and that in view of Saginaw's failure to introduce evidence, further discussion was not required under the "rule of reason" enunciated in *NRDC* v. *Morton*, 458 F.2d 827 (D.C.Cir. 1972).[8]

[7] [Continued]

> 70. As noted above, the Board is satisfied that the benefits outweigh the costs. The real question comes with respect to alternatives. Assuming that the power needs are to be met, are there better alternatives? The evidence demonstrates that there are no hydro sites available, that a pumped storage facility would not meet the load needs, that gas is not a viable alternative for power use, and that outside sources are unavailable. (Citation omitted.) The question of alternatives is then boiled down to a choice between nuclear and fossil (either oil or coal) fuel at the proposed location or at some other location.

II J.A. 53-4.

[8] The text of the Appeal Board's discussion of these issues was as follows:

> 3. Saginaw Intervenors . . . contend, in effect, that the Licensing Board should have considered . . . [*inter alia*] the alternative of not constructing the plant at all . . . or embarking on a program to conserve energy; the environmental propriety of the proposed uses of electricity; and the alleged artificial stimulation by advertising of the demand for electricity.
>
> a. Most of these effects and alternatives were in fact considered by the Board. . . . The alternative of not building the plant at all is inherently part of the cost-benefit analysis which was carried out by the Board. . . .
>
> Some of the intervenor's contentions in these exceptions seek to expand the NEPA review well beyond the pale of what we view as required by NEPA. Thus, while the scope of NEPA consideration of alternatives clearly extends beyond those which an agency itself may effectuate (see *Natural Resources Defense Council* v. *Morton*,

Shortly after the Appeal Board decision, the Commission held in Niagara Mohawk Power Corp., RAI-73-11-995 (Nov. 6, 1973), that certain energy conservation issues should be considered in licensing proceedings. Saginaw thereupon appealed to the Commission for "clarification" of the Appeal Board's decision in light of *Niagara*.

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458 F.2d 827 (D.C.Cir. 1972)), a rule of reason nevertheless applies. *Id.* at 837. Contrary to intervenors' view, and giving effect to that rule, the Board was not required to analyze the use to which Consumers' customers might put the power generated by the Midland plant to ascertain whether that use would have an adverse environmental impact. The Board made a finding that the "postulated demand is made up of normal industrial and residential use" and that it need not inquire into the propriety of such customary uses of electricity. We agree.

. . . .

b. As for the contention that the demand for electricity was artificially stimulated by the applicant's advertising, the Board stated that no evidence had been offered to support that contention; and that absent some evidence that applicant was creating abnormal demand, it [the Board] would not consider the question. We do not believe the Board acted unreasonably.

In re Consumers Power Co., ALAB-123, RAI-73-5-331 at 351-52 (May 18, 1973), I J.A. 38-39. [Footnotes and citations omitted.]

Unfortunately, discussion of energy conservation by both Licensing and Appeal Boards was obscured by conflating two separate arguments advanced by the intervenors. In addition to arguing NEPA required consideration of energy conservation alternatives, the intervenors argued that the alleged "benefits" of the plant should be discounted by the environmental harm which would be done by the products manufactured from the power generated. In particular, the intervenors focused on certain alleged carcinogens produced by the Dow Chemical Co., a large potential customer of the Midland plant. *See, e.g.*, Saginaw Environmental Contentions ¶ 34, III J.A. 118. This "end product" argument is not pressed on appeal.

The Commission responded that before Licensing Boards need explore energy conservation alternatives, intervenors "must state clear and reasonably specific energy conservation contentions in a timely fashion. Beyond that, they have a burden of coming forward with some affirmative showing if they wish to have these novel contentions explored further." In re Consumers Power Co., RAI-74-1-19 at 32 (Jan. 24, 1974), I J.A. 71. The "affirmative showing" required was further elaborated as follows:

> Purported energy conservation issues must meet a threshold test—they must relate to some action, methods or developments that would, in their aggregate effect, curtail demand for electricity to a level at which the proposed facility would not be needed. . . . Beyond that, the issue must pertain to an alternative that is "reasonably available." *Natural Resources Defense Council* v. *Morton*, 458 F.2d 827, 834 (C.A.D.C. 1972). [Footnote omitted.] Furthermore, the impact of proposed energy conservation alternatives on demand must be susceptible to a reasonable degree of proof. Largely speculative and remote possibilities need not be weighed against a convincing projection of demand. Here, as with many other issues under the National Environmental Policy Act of 1969, a rule of reason applies. See *Natural Resources Defense Council* v. *Morton, supra.*

Id., 24, I J.A. 63. Measured by these standards, the Commission held Saginaw's comments on energy conservation "fell far short."[9] Saginaw had introduced no

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[9] *Id.*, 32, I J.A. 71. The Commission does appear to have found one of Saginaw's contentions sufficient to raise an issue under *Niagara*. It related to possible revision of rates by state public utility commissions to discourage increased consumption of electricity. *See id.*, 26-27, I J.A. 65-66. The Commission disposed of this point by declaring "we will not apply *Niagara* retroactively to cases which had progressed to final

evidence demonstrating the feasibility of particular methods of energy conservation, much less evidence indicating that the proposed facility could be eliminated entirely.[10]

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order and issuance of construction permits before *Niagara* was decided." *Id.*

Admittedly, agencies sometimes apply changes in their discretionary interpretations of their governing statutes only prospectively in order to avoid unfairness to those who have relied on prior pronouncements. *See* Retail Store Union v. NLRB, 466 F.2d 380, 390 (D.C.Cir. 1972); NLRB v. Majestic Weaving Co., 355 F.2d 854, 860-61 (2d Cir. 1966). But that power cannot be stretched to permit disavowal of clear obligations a statute such as NEPA imposes on the agency itself. The Commission had no power to dispense with such consideration of energy conservation as NEPA required as of the time it was enacted in 1969, at least in those cases where the issue had been raised. *See supra* note 6.

[10] Contrary to the Commission's formulation, an alternative cannot be ignored simply because it would not *totally* alleviate the need for a proposed facility:

> . . . Nor is it appropriate, as Government counsel argues, to disregard alternatives merely because they do not offer a complete solution to the problem. If an alternative would result in supplying only part of the energy that the [proposal] would yield, then its use might possibly reduce the scope of the . . . program and thus alleviate a significant portion of the environmental harm attendant on [it].

NRDC v. Morton, 458 F.2d 827, 836 (D.C.Cir. 1972). *See also* NRDC v. Callaway, 524 F.2d 79, 93 (2d Cir. 1975) (EIS must discuss "such alternatives to the proposed action as may *partially* or completely meet the proposal's goal") [emphasis added].

It is sufficient that energy conservation might reduce projected demand for electricity so that a smaller facility, having lesser adverse environmental impact, would be adequate.

B.

Saginaw contends that the "threshold test" applied in this case is inconsistent with NEPA's "basic mandate" to the Commission to "take the initiative" in considering environmental issues. *Calvert Cliffs' Coordinating Comm., Inc.* v. *AEC*, 449 F.2d 1109, 1118-19 (D.C.Cir. 1971). We agree.

In *Calvert Cliffs* the Commission proposed to limit consideration of environmental issues under NEPA to those "which parties affirmatively raise." *Id.*, 1118. This court reversed, pointing out "it is unrealistic to assume that there will always be an intervenor with the information, energy, and money required" to investigate environmental issues. *Id.* The court held that the "primary responsibility" for fulfilling NEPA must lie with the Commission, which may not merely "sit back, like an umpire, and resolve adversary contentions at the hearing stage."[11] *Id. See also Greene County Planning Board* v. *FPC*, 455 F.2d 412, 420 (2d Cir.), *cert. denied*, 409 U.S. 849 (1972). The same considerations persuade us that the Commission may not refuse to consider energy conservation alternatives unless an intervenor first brings forward information satisfying the strictures of its "threshold test."

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[11] The Commission acknowledged in its opinion that "NEPA imposes upon us an affirmative obligation to develop an adequate record upon which to assess the environmental impact of proposed nuclear plants." RAI-74-1-19 at 31, I J.A. 70. However, the Commission felt it "must nevertheless have workable subsidiary rules for the orderly conduct of these proceedings." *Id.*

The Commission has substantial discretion in the selection of procedures. *See* Siegel v. AEC, 400 F.2d 778, 786 (D.C. Cir. 1968). However, we do not believe the asserted interest in orderly proceedings goes so far as to justify the heavy substantive burdens placed on intervenors, contrary to *Calvert Cliffs*.

The Commission derived the "threshold test" from the "rule of reason" courts use in reviewing the sufficiency of the alternatives considered in an EIS. *NRDC* v. *Morton*, 458 F.2d 827, 834 (D.C.Cir. 1972). *See also Carolina Environmental Study Group* v. *U.S.*, 510 F.2d 796, 800-801 (D.C.Cir. 1975); *NRDC* v. *Callaway*, 524 F.2d 79, 92 (2d Cir. 1975). Thus, for example, agencies are not required to consider alternatives which are "remote and speculative," *Life of the Land* v. *Brinegar*, 485 F.2d 460 (9th Cir. 1973), *cert. denied*, 416 U.S. 961 (1974), but may deal with circumstances "as they exist and are likely to exist." *Carolina Environmental Study Group* v. *U.S.*, *supra*, 510 F.2d at 801.

The Commission properly recognized that such judgments present mixed questions of law and fact which can only be intelligently resolved based on a factual record.[12] But the need to assemble data bearing on whether alternatives are promising enough to merit detailed consideration in the EIS does not mean the entire burden of compiling such information can be placed on the intervenors. In light of the allocation of responsibility established by *Calvert Cliffs*, we believe the Commission erred in promulgating a "threshold test" which essentially requires intervenors to prove an alternative satisfies the "rule of reason" before the Commission will investigate it.

In our view, an intervenor's comments on a draft EIS raising a colorable alternative not presently considered

[12] The decision that a technological or other development is a "realistic" alternative which merits full consideration in an EIS ought not turn on the intuition of "technically illiterate" judges that it is "reasonable." *Cf.* Ethyl Corp. v. EPA, No. 73-2205 (D.C.Cir. March 19, 1976) (en banc) (Bazelon, C.J., concurring). Nor, of course, should factual submissions bearing on the "reasonablenss" of alternatives be presented to the court in the first instance. *Cf.* Camp v. Pitts, 411 U.S. 138 (1973).

therein must only bring "sufficient attention to the issue to stimulate the Commission's consideration of it."[13] Thereafter, it is incumbent on the Commission to undertake its own preliminary investigation of the proffered alternative sufficient to reach a rational judgment whether it is worthy of detailed consideration in the EIS. Moreover, the Commission must explain the basis for each conclusion that further consideration of a suggested alternative is unwarranted. An explicit statement is essential to enable the parties to challenge the agency's action through motions for reconsideration, and to facilitate judicial review. The preliminary investigation of an alternative to determine whether it merits further consideration need not be nearly as detailed as that required regarding alternatives which are considered in the EIS. Often a short explanation will suffice.[14] It is not "oner-

[13] The phrase is drawn from our recent decision in Indiana & Michigan Elect. Co. v. FPC, 502 F.2d 336, 339 (D.C.Cir. 1974), *cert. denied*, 420 U.S. 946 (1975), a case concerned with the requirements of § 313(b) of the Federal Power Act, 16 U.S.C. § 825*l*(b) (1970), that objections be presented in an application for rehearing. The form of words used is not all important. The Commission's opinion in this case suggested a standard which would probably suffice as well: a "showing . . . sufficient to require reasonable minds to inquire further." RAI-74-1-19 at 32 n.27, I J.A. 71. This does not, however, support the imposition of the burden of an affirmative evidentiary showing.

[14] A suggested alternative may be essentially redundant, or merely a minor variation of approaches already considered. Or preliminary investigation may indicate that it is impractical, or that meaningful information regarding it is not available.

Where the discussion of alternatives in an EIS is "sufficient to permit a reasoned choice," NRDC v. Morton, *supra*, 458 F.2d at 836, "an EIS does not become vulnerable because it fails to consider each and every conceivable variation of the alternatives stated." Brooks v. Coleman, 518 F.2d 17, 19 (9th Cir. 1975).

ous" for an agency, as well as a court, to state its reasons "if the matter was dealt with in a conscientious manner in passing on the merits." *See Davis* v. *Clark*, 404 F.2d 1356, 1358 (D.C. Cir. 1968) (separate opinion of Tamm, J.).

C.

In the instant case, Saginaw's comments were adequate to "stimulate the Commission's consideration" of energy conservation alternatives. Saginaw identified in a general way the measures it believed merited consideration, and their relationship to the objectives of the project. Of course, if energy conservation generally were already being considered in an EIS, more detailed comments might be required to focus the Commission's attention on specific techniques. *See North Carolina* v. *FPC*, *supra* note 6.

Energy conservation was clearly a "colorable" alternative relevant to the goals of the project. The FPC routinely requires that applications to build hydroelectric facilities include an environmental report discussing "the potential for accomplishing the proposed objectives through energy conservation" as well as through alternative energy sources. 18 C.F.R. App. A § 8.2 (1975), 38 Fed. Reg. 15946, 15949 (June 19, 1973). Moreover scholars and government officials are almost unanimous that energy conservation will have an important, although not decisive, role in overall energy policy in coming decades.[15] It follows that energy conservation was

[15] *See, e.g.*, Nuclear Energy, Report of the 15th American Assembly (April 22-25, 1976), at 5. This three day symposium on the future of nuclear energy brought together 62 eminent participants from government, industry and the academic community under the auspices of Columbia University. The group reached a general consensus on the following conclusions, *inter alia*:

not to be dismissed by the Commission without inquiry or explanation.

Nor are we persuaded by the argument advanced by the Appeal Board that energy conservation was implicitly considered in the cost-benefit analysis or demand projections. *See supra* p. 7. In enacting §§ 102(C)(iii) and 102(D) of NEPA Congress required *explicit* consideration of "alternatives to the proposed action." Express consideration of other approaches to a problem places a proposed action in perspective for both the immediate decisionmaker and the public.[16]

2. Although there was considerable sentiment that overall energy growth rate should be cut down through more efficient use and conservation of energy, it was felt that some growth, possibly as low as 1.5 percent, annually, but probably higher, would occur. For electric power demand, it was felt that although the growth rate would probably be less than the "historic" growth rate of 7 percent, it was unlikely to be less than 5 to 5.5 percent, in view of the need to substitute electrical energy for some present uses of oil and gas.

3. Substantial savings can and should be made through energy efficiency improvements and a strong conservation program. Savings through voluntary action alone, although important, are likely to be limited. Some mandatory controls are essential, despite undoubted difficulties in administering such controls effectively and fairly. Market factors will have some impact, especially on commercial and industrial consumption, but they should be supplemented by tax and other incentives. In the case of individual consumption evidence to date suggests energy demands in the United States may not be strongly dependent on price in the short-run.

[16] *Cf.* EDF v. Corps. of Engineers (Tennessee-Tombigbee), 492 F.2d 1123 (5th Cir. 1974), in which the court rejected the suggestion that alternatives need not be considered where the environmental benefits of a project outweigh its costs. The court stated: "the Congressional mandate to develop alternatives would be thwarted by ending the search for other

We hold that rejection of energy conservation on the basis of the "threshold test" was capricious and arbitrary for the reasons heretofore stated. Remand for further proceedings on this and other issues discussed hereafter is therefore necessary.

II

A.

Saginaw also contends that the Commission erred by refusing to permit inquiry into the safety conclusions of the Advisory Committee on Reactor Safeguards [ACRS]. ACRS is a group of outside experts charged by statute to "make reports . . . with regard to the hazards of proposed or existing reactor facilities and the adequacy of proposed reactor safety standards." 42 U.S.C. § 2039 (1970). *See Siegel* v. *AEC*, 400 F.2d 778, 780 (D.C.Cir. 1968). Pursuant to 42 U.S.C. § 2232(b), each application for a construction permit or operating license for a commercial nuclear power generating facility must be reviewed by ACRS and a report "made . . . available to the public except to the extent that security classification prevents disclosure." *Id.*

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possibilities at the first proposal which establishes an ecological plus, even if such a positive value could be demonstrated with some certainty." *Id.*, 1135.

Demand projections based on historical growth rates are not an adequate substitute for explicit consideration of alternatives such as energy conservation. *Cf.* Carolina Environmental Study Group v. U.S., *supra*. There petitioners argued the EIS should have discussed "at greater length the alternatives of no power, less power, and other means of power generation." 510 F.2d at 800. Although the court had already concluded "Duke's prior forecasts of future demand" had been extremely accurate, *id.*, the court found it necessary to go on to examine the discussion of alternatives in the EIS, *id.*, 801, and found it adequate under the "rule of reason" in the circumstances therein.

The ACRS report in this case was a 5 page, single-spaced typewritten letter. In language accessible to the determined layman, the ACRS report discusses roughly half a dozen design problems raised by the Midland reactors, and recommends modifications to alleviate them.[17] Following discussion of these specific problems, the ACRS report concludes:

> *Other problems* related to large water reactors have been identified by the Regulatory Staff and the ACRS and cited in previous ACRS reports. The Committee

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[17] IV J.A. 93-98. Changes suggested by ACRS are almost always voluntarily adopted by the applicant. While ACRS *approval* (as opposed to scrutiny) is not required by law before a license issues, "in practice it is very unlikely that an applicant would persist in going before [the Licensing Board] over their objection." Union of Concerned Scientists v. AEC, 499 F.2d 1069, 1073 n.5 (D.C.Cir. 1974).

An example of the nature of the ACRS report is the following:

> The Committee has commented in previous reports on the development of systems to control the buildup of hydrogen in the containment which might follow in the unlikely event of a major accident. The applicant proposes to make use of a technique of purging through filters after a suitable time delay subsequent to the accident. However, the Committee recommends that the primary protection in this regard should utilize a hydrogen control method which keeps the hydrogen concentration within safe limits by means other than purging. The capability for purging should also be provided. The hydrogen control system and provisions for containment atmosphere mixing and sampling should have redundancy and instrumentation suitable for an engineered safety feature. The Committee wishes to be kept informed of the resolution of this matter.

IV J.A. 97.

A supplemental ACRS report was also prepared several months later addressing several additional problems. IV J.A. 99-100.

> believes that resolution of these items should apply equally to the Midland Plant Units 1 & 2.
>
> The Committee believes that the above items can be resolved during construction and that, if due consideration is given to these items, the nuclear units proposed for the Midland Plant can be constructed with reasonable assurance that they can be operated without undue risk to the health and safety of the public.

IV J.A. 97-98 [emphasis added].

Pointing out that it could not determine what "[o]ther problems" the ACRS had in mind, or what "resolution" of them it had suggested, Saginaw requested the Licensing Board to permit discovery into these matters. Saginaw's discovery requests took the form of 337 interrogatories, various document demands, subpoenas, and requests for depositions directed to ACRS members. These requests were all denied, for essentially two reasons. First, it was stated that "the ACRS letter is only admitted as part of the record to show compliance with the statutory requirements . . . ." RAI-74-5-331 at 340. Second, the Commission had indicated in another case that it would be inappropriate to probe the reasoning of individual ACRS members. *Id.*, 340 & n. 62.

We agree with Saginaw that further explication of the ACRS report was necessary, but agree with the Commission that discovery from individual ACRS members was not the proper way to obtain it.

B.

The role Congress intended for ACRS clearly emerges from its legislative history. In 1957, ACRS was added to the Atomic Energy Act of 1954 by Pub.L. 85-256, 71 Stat. 579. Prior to that time, the Commission had established its own "Committee on Reactor Safeguards." *See* S.Rep. No. 296, 85th Cong., 1st Sess., 1957 U.S.Code

Cong. & Admin. News 1803, 1813 [hereafter USCCAN]. However, in 1956, the Commission issued the construction permit litigated in *Power Reactor Development Co.* v. *Int'l Union of Elect. Workers*, 367 U.S. 396 (1961), despite an adverse committee report which had not been made public. *See Union of Concerned Scientists* v. *AEC*, 499 F.2d 1069, 1073 n.5, 1075 n.13 (D.C.Cir. 1974). Aroused by this incident, Congress gave ACRS an independent statutory existence and required that its reports be made public. *Id.*

The Commission opposed making a public ACRS report a "formal statutory requirement." USCCAN at 1816. However, noting the "great prestige" and credibility which the Reactor Safeguards Committee enjoyed in the eyes of the public, the Joint Committee on Atomic Energy stated:

> The report of the [ACRS] committee is to be made public *so that all concerned may be apprised of the safety or possible hazards of the facility.* It is the belief of the Joint Committee that when the public is adequately and accurately informed that it will be in a better position to accept the construction of any reactors.

USCCAN 1825, 1826 [emphasis added]. The statute established ACRS "as part of the administrative procedures in chapter 16 of the act" to provide the "same type of scrutiny and prestige" as the Reactor Safeguards Committee had in the past. USCCAN at 1825. As part of its mandate, ACRS also was to "advise the Commission with respect to the hazards involved at any facility" and to "insure that any features of new reactors would be as safe as possible." *Id.*

The ACRS report in this case must be evaluated in light of the congressional purposes. While the reference to "other problems" identified in previous ACRS reports

may have been adequate to give the Commission the benefit of ACRS members' technical expertise, it fell short of performing the other equally important task which Congress gave ACRS: informing the *public* of the hazards. At a minimum, the ACRS report should have provided a short explanation, understandable to a layman, of the additional matters of concern to the committee, and a cross-reference to the previous reports in which those problems, and the measures proposed to solve them, were developed in more detail. Otherwise, a concerned citizen would be unable to determine, as Congress intended, what other difficulties might be lurking in the proposed reactor design. Since the ACRS report on its face did not comply with the requirements of the statute, we believe the Licensing Board should have returned it *sua sponte* to ACRS for further elaboration of the cryptic reference to "other problems." [18]

Turning to the propriety of discovery directed to individual ACRS members and ACRS documents, we conclude it was not error to deny these requests. ACRS' unique role as an independent "part of the administrative procedures in chapter 16 of the act," *supra*, is sufficiently analogous to that of an administrative decisionmaker to bring into play the rule that the "mental processes" of such a "collaborative instrumentalit[y] of justice" are not ordinarily subject to probing. *United States* v. *Morgan*, 313 U.S. 409, 422 (1941). This rule is particularly apropos in light of ACRS's collegial composition such that no individual may speak for the group as a whole. Where an ACRS report on its face omits material

[18] This is not to say that an ACRS report must contain detailed factual findings of the kind necessary to aid judicial review. Under Commission rules, when ACRS conclusions are controverted, a factual record is compiled anew before the Licensing Board. *See* 10 C.F.R., pt. 2, App. A, V(f)(1) (1976).

information, the appropriate course is not discovery but to return it for supplementation. *Cf. Dunlop* v. *Bachowski*, 421 U.S. 560, 574-75 & n. 11 (1975). We merely hold here that neither the Atomic Energy Act nor general principles of administrative law required the Commission to grant Saginaw's discovery requests.[19]

On remand, the ACRS report should be returned to the ACRS for clarification of the ambiguities noted above.

III

The fuel cycle issues in these cases are controlled by *Natural Resources Defense Council* v. *United States Nuclear Regulatory Commission*, —— F.2d ——, Nos. 74-1385 & 74-1586, (D.C.Cir., decided today). The final EIS prepared in regard to Midland plant units 1 & 2 says only that fuel wastes will be shipped to unidentified offsite disposal areas. On remand, the Commission shall undertake appropriate consideration of waste disposal and other unaddressed fuel cycle issues, and restrike the cost-benefit analysis, as necessary, in accordance with *NRDC* v. *NRC*, *supra*.

As this matter requires remand and reopening of the issues of energy conservation alternatives as well as recalculation of costs and benefits, we assume that the Commission will take into account the changed circumstances regarding Dow's need for process steam, and the intended continued operation of Dow's fossil-fuel generating facilities.[20]

[19] The case as presented calls upon the court to make no decision whether the Federal Advisory Committee Act, 5 U.S.C. App. I § 10(b) (Supp. III, 1973), entitles a party upon proper request to have access to data which were before the ACRS.

[20] This court has previously addressed factors to be considered in reanalysis of costs and benefits in the context of a

IV.

Petitioners' other contentions must be rejected for lack of support in the record, or because prior decisions have concluded the issue unfavorably to petitioners.[21] The

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derating license amendment calling for continued operation at a lower level:

> An alternative to be considered is complete abandonment of the project, just as it was at both the construction and full-power operating license stages. [citation to record omitted]. As at those stages, sunk costs are not appropriately considered costs of abandonment, although replacement costs may be if construction of a substitute facility could reasonably be expected as a consequence of abandonment.

Union of Concerned Scientists v. AEC, 499 F.2d 1069, 1084 n.37 (D.C.Cir. 1974).

[21] We conclude that the Appeal Board's treatment of the "quality assurance" and "quality control" requirements was adequate, and, particularly in light of the considerations and conditions set out in its orders, should not now be set aside.

The question of the propriety of using a generic rulemaking proceeding to determine standards governing Emergency Core Cooling Systems (for all like reactors) has been concluded unfavorably to petitioners by Union of Concerned Scientists v. AEC, 499 F.2d 1069 (D.C. Cir., 1974).

Mapleton Intervenors raise alleged weaknesses in the final EIS concerning data on the fogging and icing problems caused by the facility's proposed 880-acre cooling pond. Here, the Licensing Board directed, and the Appeal Board affirmed, I J.A. 47, applicant Consumers to conduct a study of fogging and icing in its required ecological surveillance program. The Commission is free to reassess this problem on remand, but it has received sufficient study that the court is not impelled to order that it be done.

With respect to petitioners' complaint that inadequate attention has been given to the possibility of a Class 9 breach of containment or other accident, *see* Carolina Environmental Study Group v. United States, 510 F.2d 796, 799-800 (D.C. Cir. 1975); Ecology Action v. United States Atomic Energy Commission, 492 F.2d 998, 999 (2nd Cir. 1974).

orders granting construction permits for the Midland reactors are hereby remanded for further proceedings in conformity with our opinion.

So ordered.

Notice: This opinion is subject to formal revision before publication in the Federal Reporter or U.S. App. D.C. Reports. Users are requested to notify the Clerk of any formal errors in order that corrections may be made before the bound volumes go to press.

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 74-1385

NATURAL RESOURCES DEFENSE COUNCIL, INC., ET AL, PETITIONER

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION AND UNITED STATES OF AMERICA, RESPONDENTS

VERMONT YANKEE NUCLEAR POWER CORPORATION, INTERVENOR

No. 74-1586

NATURAL RESOURCES DEFENSE COUNCIL, INC., AND CONSOLIDATED NATIONAL INTERVENORS, PETITIONERS

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION AND UNITED STATES OF AMERICA, RESPONDENTS

BALTIMORE GAS AND ELECTRIC CO., ET AL., INTERVENORS

Petition for Review of an Order of the Nuclear Regulatory Commission

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Argued May 27, 1975

Decided July 21, 1976

George W. Mayo, Jr., with whom *Robert M. Jeffers, David J. Hensler, Patrick M. Raher, Richard E. Ayres* and *Anthony Z. Roisman*, were on the brief for petitioners in No. 74-1385.

David Hensler and *Patrick M. Raher*, with whom *Robert M. Jeffers, George W. Mayo, Jr., Richard E. Ayres* and *Anthony Z. Roisman*, were on the brief for petitioners in No. 74-1586.

James A. Glasgow, Attorney, U.S. Nuclear Regulatory Commission, with whom *Wallace H. Johnson*, Assistant Attorney General, *Edmund B. Clark, John J. Zimmerman*, Attorneys, Department of Justice, *Raymond M. Zimmet*, Acting Solicitor, U.S. Nuclear Regulatory Commission, were on the brief for respondents. *Marcus A. Rowden, Jerome Nelson, Joseph DiStefono*, and *Guy H. Cunningham, III*, Attorneys, U.S. Nuclear Regulatory Commission and *George R. Hyde* and *Edward J. Shawaker*, Attorneys, Department of Justice, also entered appearances for respondents.

George C. Freeman, Jr., with whom *W. Taylor Reveley, III, David S. Brollier* and *F. Case Whitlemore* were on the brief for intervenor, Baltimore Gas and Electric Company in No. 74-1586.

Thomas G. Dignan, Jr., for intervenor, Vermont Yankee Nuclear Power Corporation in No. 74-1385.

Louis J. Lefkowitz, Attorney, General of the State of New York and *John F. Shea, III*, Assistant Attorney General of the State of New York filed a brief on behalf of the State of New York as *amicus curiae*.

Arvin E. Upton, Harry H. Voight and *Eugene R. Fidell*, Filed a brief on behalf of Commonwealth Edison Company, Consolidated Edison Company of New York, Inc., Niagara Mohawk Power Corporation, Omaha Public Power District Powers Authority of the State of New

York and Rochester Gas and Electric Corp., as *amici curiae* urging affirmance.

Before: BAZELON, *Chief Judge*, EDWARDS,* *Circuit Judge* for the Sixth Circuit and TAMM, *Circuit Judge*

Opinion for the Court filed by *Chief Judge* BAZELON.

Separate statement of *Chief Judge* BAZELON.

Separate statement filed by *Circuit Judge* TAMM, concurring in the result.

BAZELON, *C.J.*: The problems posed in both these cases relate to the manner and extent to which information concerning the environmental effects of radioactive wastes must be considered on the public record in decisions to license nuclear reactors.

I. INTRODUCTION

Appeal number 74-1385 involves a proceeding to license a specific nuclear reactor (the Vermont Yankee Nuclear Power Station located near Vernon, Vermont). Pursuant to the National Environmental Policy Act,[1] petitioners[2]

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* Sitting by designation pursuant to 28 U.S.C. § 291(a).

[1] 42 U.S.C. § 4321, *et seq.* (1970) (hereafter "NEPA").

[2] Petitioners in 74-1385 are the Natural Resources Defense Council, Inc. ("NRDC") and the New England Coalition on Nuclear Pollution, Inc., voluntary organizations supported by contributions from individual members, which intervened in the licensing proceedings.

NRDC is also a petitioner in 74-1586, where it is joined by Consolidated National Intervenors, Inc. ("CNI"), a coalition of almost eighty public interest groups and individuals which actively participated in the rule making proceedings. Several groups such as the Sierra Club and the Union of Concerned Scientists which are members of CNI also made individual presentations.

[Continued]

sought consideration of the environmental effects of that portion of the "nuclear fuel cycle" [3] attributable to operation of that reactor. The Appeal Board held that Licensing Boards [4] must consider the environmental effects of trans-

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Since on all but a few issues these groups adopted the same positions, for convenience they are referred to collectively as "public interest intervenors" in order to distinguish them from a group of 14 utility companies which also actively participated in the rulemaking. One member of that group, Baltimore Gas & Electric Co., has also intervened in the proceedings in this court.

[3] The "nuclear fuel cycle" is that chain of activities beginning with mining of uranium ore and extending through final reprocessing and disposal of radioactive wastes by which fuel for a nuclear reactor is processed. Most of these events take place off the individual reactor site, but are necessary to its continued operation.

Although the nuclear fuel cycle encompasses numerous stages, these cases are concerned almost exclusively with the reprocessing and disposal of wastes which the public interest intervenors contend account for by far the largest portion of the environmental impact of the fuel cycle.

The word *disposal* may itself be misleading, for it connotes some physical or chemical step which renders the wastes less toxic. Under present technology, the only known agent of detoxification is the passage of great amounts of time. The phase of the nuclear fuel cycle referred to as "disposal" generally refers only to storage of wastes in physical isolation.

[4] Licensing of commercial nuclear reactors embraces two separate proceedings—the first to determine whether the facility should be constructed; the second to determine whether it should be licensed to operate. *See generally*, Power Reactor Development Corp. v. I.U.E.W., 367 U.S. 396 (1961).

Proceedings are conducted before a three-member Atomic Safety and Licensing Board, 42 U.S.C. § 2241, which is the counterpart of an Administrative Law Judge in other agencies. The Licensing Board is typically composed of two nuclear physicists and one lawyer who serves as chairman.

[Continued]

portation of fuel to a reactor and of wastes to reprocessing plants, but need not consider the "operations of the reprocessing plants or the disposal of wastes" in individual licensing proceedings. *In re Vermont Yankee Nuclear Power Corp.*, ALAB-56, 4 AEC 930 (June 6, 1972), I-J.A. 72, 76.[5]

Appeal number 74-1586 involves a rulemaking proceeding which the Commission instituted shortly thereafter with specific reference to the *Vermont Yankee* decision. The purpose of the rulemaking was to reconsider whether environmental effects of all stages of the uranium fuel cycle should be included in the cost-benefit analysis for licensing individual reactors. 37 Fed.Reg. 24191 (Nov. 15, 1972), II-J.A. 1. The Commission concluded the environmental effects of the fuel cycle, including waste disposal, were "relatively insignificant," [6] but that it was preferrable to take them into account. Therefore, a rule was promulgated requiring a series of specified numerical values (set out as Table S-3 accompanying the rule) be factored into the cost-benefit analysis

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The Atomic Energy Commission ("AEC") has delegated its review functions over Licensing Board decisions to Atomic Safety and Licensing Appeal Boards, subject to discretionary determination by the AEC itself of "major or novel questions of policy, law or procedure." 10 C.F.R. § 2.785(a); *id.* (d)(1).

The AEC was abolished by the Energy Reorganization Act of 1974, 88 Stat. 1233 *et seq.*, and its functions divided between the United States Nuclear Regulatory Commission (NRC), which has been substituted as formal respondent by order of this court, and the Energy Research and Development Agency (ERDA). For consistency, the terminology AEC or "the Commission" is used throughout.

[5] References to the joint appendix in 74-1385 are in the form "I-J.A." Both volumes of the appendix in 74-1586 are referred to as "II-J.A."

[6] *See infra* note 19.

for an individual reactor. These values are intended to represent the incremental contribution of an additional reactor to the environmental effect of the fuel cycle. The rule further provides that in addition to Table S-3, "No further discussion of such environmental effects shall be required." [7] Finally, it is declared that "[i]nsofar as this rule differs" from that announced in the *Vermont Yankee* decision, *supra*, that decision shall have "no further precedential significance." *Id.*

II. VERMONT YANKEE (74-1385)

It is undisputed that a reactor licensing is a "major Federal action[] significantly affecting the quality of the human environment" which requires a "detailed" environmental impact statement under § 102(2)(C) of NEPA, 42 U.S.C. § 4332(2)(C). That section requires an impact statement to consider, *inter alia*,

> (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
>
> * * * *
>
> (v) any irreversible and irretriveable commitments of resources which would be involved in the proposed action should it be implemented.

The plain meaning of this language encompasses radioactive wastes generated by the operations of a nuclear power station, just as it does the stack gases produced by a coal-burning power plant.

Nor are the wastes generated by the subject reactor *de minimis*. We were informed at argument that the Vermont Yankee plant will produce approximately 160 pounds of plutonium wastes annually during its 40-year

[7] 39 Fed.Reg. 14188, 14191 (April 22, 1974), II-J.A. 507, 509. The rule is codified as Part 51.20(e) of 10 C.F.R. (1975) in a section entitled "Applicant's Environmental Report—Construction Permit Stage."

life span.[8] Plutonium is generally accepted as among the most toxic substances known; inhalation of a single microscopic particle is thought to be sufficient to cause cancer.[9] Moreover, with a half-life of 25,000 years, plutonium must be isolated from the environment for 250,000 years before it becomes harmless. Operation of the facility in question will also produce substantial quantities of other "high-level" [10] radioactive wastes in the form of stron-

[8] There has been some disagreement between the parties concerning the exact amounts of wastes to be produced. We are required to consider projects from the perspective of their potential effect on the "quality of the human environment." 42 U.S.C. § 4332(2)(C). Since plutonium and other high level wastes may be toxic in extremely small quantities, these variances are not of an order which would affect our conclusions.

[9] *See* Luschbauch & Langham, *A Dermal Lesion from Implanted Plutonium*, 86 ARCHIVES OF DERMATOLOGY at 121-24 (Oct. 1962).

The dangers of plutonium must be kept in perspective. Certain industrial chemicals and substances common in laboratories may be equally toxic. B. Cohen, *Environmental Hazards in High-Level Radioactive Waste Disposal*, 2 (unpublished). Recent theoretical calculations suggest many would survive even intentional dispersal of plutonium over a city. B. Cohen, *The Hazards in Plutonium Dispersal*, Institute for Energy Analysis, Oak Ridge, Tenn. (1975). *See also* Bethe, *The Necessity of Fission Power*, 234 SCIENTIFIC AMERICAN 21, 29 (1976).

[10] According to a pamphlet published by the AEC's office of Information to inform the general public, "high-level" wastes consist primarily of highly radioactive spent reactor fuel containing "several hundred to several thousand curies per gallon in liquid form . . . ." Fox, *Radioactive Waste*, AEC No. IB-508, 14-15 (rev. ed. 1969). They "pose the most severe potential health hazard and the most complex technical problems in management," *id.*, and thus attracted the bulk of the attention in these proceedings.

Less radioactive "low-level" wastes are also produced, primarily when objects such as pipes, rags or other debris are exposed to radioactivity produced in the reactor core. Low-

tium-90 and cesium-137 which, with their shorter, 30-year half-lives, must be isolated from the environment for "only" 600 to 1000 years.[11]

The Appeal Board advanced two major arguments to justify its decision that reprocessing and waste disposal issues need not be considered at the licensing stage: (1) that these issues are too speculative; and (2) that they are more appropriately considered when reprocessing and waste disposal facilities are themselves licensed. We turn now to these contentions.

The Board agreed that "there will be an incremental environmental effect ultimately resulting from the operation of this reactor as the result of the operation of whatever reprocessing and disposal grounds may from time to time be used during the life of the plant." [12] In its opin-

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level wastes have long been disposed of in commercial burial grounds and were thought not to constitute a major problem. Recently, however, EPA and GAO have publicly reported radioactive material has been "migrating" from such facilities at a rate "much more rapid than scientists thought possible." *See* "New Alarms About Old Nuclear Wastes," BUSINESS WEEK (Feb. 2, 1976) at 17; "GAO Reports New Nuclear Garbage Problem," 6 SCIENCE & GOV. RPT. 8 (Feb. 1, 1976).

[11] The general outlines of the high-level waste disposal problem are undisputed. In Scientists' Institute for Public Information, Inc. v. AEC (*"SIPI"*), 156 U.S.App.D.C. 395, 481 F.2d 1079, 1098 (1973), this court observed:

> These wastes will pose an admitted hazard to human health for hundreds of years, and will have to be maintained in special repositories. *The environmental problems attendant upon processing, transporting and storing these wastes . . . warrant the most searching scrutiny under NEPA.* [Emphasis added.]

[12] I-J.A. 80. We note at the outset that this standard is misleading because the toxic life of the wastes under discussion far exceeds the life of the plant being licensed. The

ion, however, these effects were too "contingent and presently indefinable" to be evaluated at the time of licensing in view of the 40-year expected life of the reactor. The Board wrote:

> It is evident to us that evaluation of the environmental effects of the operation of one or more unidentifiable reprocessing plants, employing separation processes which are unidentified and which may or may not now be known or used, during the course of the forty-year life of the plant, is not possible at this time and in this proceeding.

I-J.A. 82. This approach was decisively rejected in *SIPI*, supra, note 11, 481 F.2d at 1092. There we held that the obligation to make reasonable forecasts of the future is implicit in NEPA and therefore an agency cannot "shirk [its] responsibilities under NEPA by labeling any and all discussion of future environmental effects as 'crystal ball inquiry.'" "Meaningful information" concerning the effects of waste reprocessing and disposal technology is presently available, *see SIPI*, 481 F.2d at 1094, 1096. As the Board noted, a reprocessing plant has been operated by the Commission for some time, and additional plants are under construction. I-J.A. 79. The possibility that

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environmental effects to be considered are those flowing from reprocessing and passive storage for the full detoxification period.

It is also misleading to focus solely on the *incremental* impact of the waste generated by an additional reactor. *See* NRDC v. Callaway, 524 F.2d 79, 88 (2d Cir. 1975):

> [A]n agency may not . . . treat[] a project as an isolated "single-shot" venture in the face of persuasive evidence that it is but one of several substantially similar operations. . . . To ignore the prospective cumulative harm under such circumstances could be to risk ecological disaster.

See also Kleppe v. Sierra Club, 44 U.S.L.W. 5104, 5109 (U.S., June 28, 1976) (Comprehensive EIS should address cumulative impact of proposals "pending concurrently"); *cf. id.* at 5111 n.26.

improved technology may be developed during the 40-year life span of a reactor does not render consideration of environmental issues too speculative, as the Board appears to suggest. NEPA's requirement for forecasting environmental consequences far into the future implies the need for predictions based on existing technology and those developments which can be extrapolated from it.[13]

As more and more reactors producing more and more waste are brought into being, "irretrievable commitments [are] being made and options precluded," *see SIPI*, 481 F.2d at 1094, 1098, and the agency must predict the environmental consequences of its decisions as it makes them. *See Aberdeen & Rockfish R.R. v. SCRAP*, 422 U.S. 289, 320 (1975).

The second argument advanced by the Board is that licensing proceedings for reprocessing plants are a more "appropriate proceeding" in which to weigh the environmental effects of reprocessing and waste disposal. I-J.A. 86. Licensing of a reprocessing plant or waste disposal facility is itself a "major Federal action" affecting the environment which requires a NEPA statement. The real question posed by the Board's opinion is whether the environmental effects of the wastes produced by a

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[13] Technical breakthroughs not now foreseen may of course render these assumptions too conservative, and environmental costs may turn out to be less than expected. The alternative is to rest on a blind faith in technological progress. This the draftsmen of NEPA were quite evidently unwilling to do.

Conversely, unforeseen problems sometimes crop up to forestall anticipated technological solutions. *See, e.g., infra* notes 46 & 47. Where important changes in the state of the art or other major uncertainties are in the offing, meaningful assessments of future environmental impacts might be facilitated by making two alternative estimates: one based only on existing technology and another which takes into account developments which may reasonably be anticipated. We have no occasion in this case to decide whether a court could ever require such a procedure.

nuclear reactor may be ignored in deciding whether to build it because they will later be considered when a plant is proposed to deal with them. To answer this question any way but in the negative would be to misconstrue the fundamental purpose of NEPA.[14] Once a series of reactors is operating, it is too late to consider whether the wastes they generate should have been produced, no matter how costly and impractical reprocessing and waste disposal turn out to be; all that remain are engineering details to make the best of the situation which has been created.[15] NEPA's purpose was to break the cycle of such incremental decision-making:

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[14] *Cf.* Calvert Cliffs' Coordinating Comm. v. AEC, 449 F.2d 1109, 1128 (D.C.Cir. 1971). There the Commission proposed to forestall consideration of environmental issues in granting reactor construction permits until an operating license was issued. This court pointed out: "Once a facility has been completely constructed, the economic cost of any alteration may be very great . . . . By refusing to consider requirement of alterations until construction is completed, the Commission may effectively foreclose the environmental protection desired by Congress."

[15] Intervenor Baltimore Gas & Electric Co. contended at argument "however broad NEPA may be, it does not require agencies like the AEC, ICC or CAB to examine in the impact statement the very reason for being of that agency." We have already rejected that argument in Natural Resources Defense Council v. Morton, 458 F.2d 827, 836 (D.C.Cir. 1972): "The need for continuing review of environmental impact of alternatives under NEPA cannot be put to one side on the ground of past determinations by Congress or the President." *See also* Calvert Cliffs' Coordinating Comm. v. AEC, *supra* note 14, 449 F.2d at 1127. One function of NEPA is to provide systematic feedback to Congress and the public on the environmental costs of implementing programs so that they may be re-evaluated in the light of experience.

Moreover, the "reason for being" of the agencies administering the Atomic Energy Act of 1954 has never been unlimited development of civilian nuclear power without re-

> Policy is established by default and inaction. Environmental problems are only dealt with when they reach crisis proportion . . . . Important decisions concerning the use and shape of man's environment continue to be made in small but steady increments which perpetuate rather than avoid the recognized mistakes of previous decades.

Senate Rep. No. 296, 91st Cong., 1st Sess. 5 (1969). Decisions to license nuclear reactors which generate large amounts of toxic wastes requiring special isolation from the environment for several centuries are a paradigm of "irreversible and irretrievable commitments of resources" which must receive "detailed" analysis under § 102(2)(C)(v) of NEPA, 42 U.S.C. § 4332(2)(C)(v).[16] We therefore hold that absent effective generic proceedings to consider these issues, they must be dealt with in individual licensing proceedings.[17]

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gard to the costs or risks. The Congressionally declared purpose is only to "encourage widespread participation in the development and utilization of atomic energy for peaceful purposes *to the maximum extent consistent with . . . the health and safety of the public.*" 42 U.S.C. § 2013(d) (1970) [emphasis added].

[16] No one suggests that the two sentence statement in the Vermont Yankee Final Environmental Impact Statement is adequate to satisfy § 102(2)(c). It reads:

> Long-lived radioactive materials will be produced by fission of nuclear fuel in the core of the reactor and neutron activation of reactor parts near the core. The eventual disposal and storage of radioactive materials will require a certain amount of space, probably in an area remote from this plant, for a very long period of time, and could for all practical purposes be considered as an irreversible commitment of resources.

I-J.A. 263.

No attempt is made to estimate the quantity of wastes produced, describe what precautions must be taken, or assess the costs and risks involved.

[17] When the final full-power, full-term operating license for the Vermont Yankee Nuclear Power Station was issued, the

The order granting a full-term license for the Vermont Yankee plant is hereby remanded to await the outcome of further proceedings in the rulemaking, discussed hereafter.

III. RULEMAKING (74-1586)

(A.)

The notice of proposed rulemaking, 37 Fed.Reg. 24191 (Nov. 15, 1972), suggested as a possible alternative to the rule of *Vermont Yankee*, *supra*, that a series of specified numerical values (set out as Table S-3 in the notice) be factored into the cost-benefit analysis for individual

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Appeal Board "declined to re-examine" its earlier holdings that reprocessing and waste disposal issues need not be considered, since the rulemaking proceeding was then pending. I-J.A. 495-96. As a result, the Government argues the only issue raised is "whether the Commission under the National Environmental Policy Act (NEPA) could deal with fuel cycle issues by rulemaking, instead of in the context of numerous separate adjudications, such as the Vermont Yankee licensing proceeding." Respondent's brief at 5.

No one questions the AEC's power to do so in this proceeding. *Cf.* Union of Concerned Scientists v. AEC, 499 F.2d 1069 (D.C.Cir. 1974). Nor do we doubt that generic proceedings are a more efficient forum in which to develop these issues without needless repetition and potential for delay. *See* Ecology Action v. AEC, 492 F.2d 998, 1002 (2d Cir. 1974) (Friendly, J.) (dictum); Note, "The Use of Generic Rulemaking to Resolve Environmental Issues in Nuclear Power Plant Licensing," 61 VA.L.REV. 869, 878-79 (1975). However, the decision to hold generic proceedings rather than to leave these issues for individual licensings is left to agency discretion. *See infra* note 27.

What the agency may not do, consistent with NEPA, is to fail to give these issues adequate consideration in either forum. Thus, until an adequate generic proceeding is held (which may also consolidate a number of pending cases, *see, e.g.*, Specialized Common Carrier Services, 29 F.C.C. 870 (1971)), these issues will be ripe in individual licensing proceedings.

reactors.[18] These values were intended to represent the

[18]

TABLE S-3.—*Summary of environmental considerations for uranium fuel cycle*

[Normalized to model LWR annual fuel requirement]

Natural resource use	Total	Maximum effect per annual fuel requirement of model 1,000 MWe LWR
Land (acres):		
Temporarily committed	62	
Undisturbed area	43	
Disturbed area	19	Equivalent to 90 MWe coal-fired powerplant.
Permanently committed	4.6	
Overburden moved (millions of MT)	2.7	Equivalent to 90 MWe coal-fired powerplant.
Water (millions of gallons):		
Discharged to air	156	=2 percent model 1,000 MWe LWR with cooling tower.
Discharged to water bodies	11,040	
Discharged to ground	123	
Total	11,319	<4 percent of model 1,000 MWe LWR with once-through cooling.
Fossil fuel:		
Electrical energy (thousands of MW-hour)	317	<3 percent of model 1,000 MWe LWR output.
Equivalent coal (thousands of MT)	115	Equivalent to the consumption of a 45 MWe coal-fired powerplant.
Natural gas (millions of scf)	92	<0.2 percent of model 1,000 MWe energy output.
Effluents—chemical (MT):		
Gases (including entrainment):[1]		
SO_x	4,400	
NO_x[2]	1,177	Equivalent to emissions from 45 MWe coal-fired plant for a year.
Hydrocarbons	13.5	
CO	28.7	
Particulates	1,154	
Other gases:		
F^-	.72	Principally from UF_6 production enrichment and reprocessing. Concentration within range of state standards—below level that has effects on human health.
Liquids:		
$SO_4^=$	10.3	From enrichment, fuel fabrication, and reprocessing steps. Components that constitute a potential for adverse environmental effect are present in dilute concentrations and receive additional dilution by receiving bodies of water to levels below permissible standards. The constituents that require dilution and the flow of dilution water are: NH_3—400 cfs NO_3—20 cfs Fluoride—70 cfs
NO_3^-	26.7	
Fluoride	12.9	
Ca^{++}	5.4	
Cl^-	8.6	
Na^+	16.9	
NH_3	11.5	
Fe	.4	
Tailings solutions (thousands of MT)	240	From mills only—no significant effluents to environment.
Solids	91,000	Principally from mills—no significant effluents to environment.
Effluents—Radiological (curies):		
Gases (including entrainment):		
Rn-222	73	Principally from mills—maximum annual dose rate <4 percent of average natural background within 5 mi of mill. Results in 0.06 man-rem per annual fuel requirement.
Ra-226	.02	
Th-230	.02	
Uranium	.032	
Tritium (thousand)	16.7	Principally from fuel reprocessing plants—Whole body dose is 6 man-rem per annual fuel requirements for population within 50 mi radius. This is <0.007 percent of average natural background dose to this population. Release from Federal Waste Repository of 0.005 Ci/yr has been included in fission products and transuranics total.
Kr-85 (thousands)	330	
I-129	.0024	
I-131	.024	
Fission products and transuranics	1.01	
Liquids:		
Uranium and daughters	2.1	Principally from milling—included in tailings liquor and returned to ground—no effluents; therefore, no effect on environment.
Ra-226	.0034	From UF_6 production-concentration 5 percent of 10 CFR 20 for total processing of 27.5 model LWR annual fuel requirements.
Th-230	.0015	
Th-234	.01	From fuel fabrication plants—concentration 10 percent of 10 CFR 20 for total processing 25 annual fuel requirements for model LWR.
Rn-106[3]	.15	From reprocessing plants—maximum concentration 4 percent of 10 CFR 20 for total reprocessing of 26 annual fuel requirements for model LWR.
Tritium (thousands)	2.5	
Solids (buried):		
Other than high level	601	All except 1 Ci comes from mills—included in tailings returned to ground—no significant effluent to the environment. 1 Ci from conversion and fuel fabrication is buried.
Thermal (billions)	3,360	<7 percent of model 1,000 MWe LWR.
Transportation (man-rem): Exposure of workers and general public	.334	

[1] Estimated effluents based upon combustion of equivalent coal for power generation.
[2] 1.2 percent from natural gas use and process.
[3] Cs-137 (0.073 Ci/AFR) and Sr-90 (0.004 Ci/AFR) are also emitted.

incremental contribution of a hypothetical 1000 MWe model light water reactor to the total environmental effect of the uranium fuel cycle. While expressed as numerical values in Table S-3, a fair summary of the conclusions incorporated into the rule is that the environmental effects of the fuel cycle are "insignificant." [19] The notice further stated that the "supporting data for this summary table" is contained in a staff document entitled the "Environmental Survey of the Nuclear Fuel Cycle" (Nov. 6, 1972) [hereafter "Environmental Survey"], which was simultaneously made public.[20]

An "informal rulemaking hearing" of the "legislative-type" was scheduled to receive comments in the form of "oral or written statements." [21] By subsequent notice, the Commission designated a three-member hearing board to preside, and reiterated, "The procedural format for the hearing will follow the legislative pattern, and no discovery or cross-examination will be utilized." 38 Fed. Reg. 49 (Jan. 3, 1973).[22]

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[19] In explaining its decision not to require Table S-3 to be applied retroactively, the Commission stated:

> In view of the fact that the environmental effects of the uranium fuel cycle have been shown to be relatively insignificant, the Commission believes that it is unnecessary to apply the [rule] to . . . environmental reports submitted prior to its effective date. . . .

39 Fed.Reg. 14190 (April 22, 1974); II-J.A. 508.

[20] 37 Fed.Reg. 24192 n.1; *id.*, 24193.

It is conceded that the Environmental Survey was not "intended to be a detailed environmental statement as defined in the National Environmental Policy Act of 1969. . . ." I-J.A. 512; 39 Fed.Reg. 14188 (April 22, 1974), II-J.A. 507.

[21] 37 Fed. Reg. 24191 (Nov. 15, 1972).

[22] It should be noted that members of the presiding hearing board were empowered to ask questions, and occasionally did. In addition, "over 100 pages of handwritten calculations" and

The primary argument advanced by the public interest intervenors is that the decision to preclude "discovery or cross-examination" denied them a meaningful opportunity to participate in the proceedings as guaranteed by due process. They do not question the Commission's authority to proceed by informal rulemaking, as opposed to adjudication. They rely instead on the line of cases indicating that in particular circumstances procedures in excess of the bare minima prescribed by the Administrative Procedure Act, 5 U.S.C. § 553, may be required.[23]

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prior drafts of the Environmental Survey were eventually placed in the public document room. 39 Fed.Reg. 14190-91 (April 22, 1974).

None of these documents, however, dealt with the crucial waste disposal issues covered by Dr. Pittman, *see infra* pp. 23-32.

[23] *See, e.g.*, Mobil Oil Corp. v. FPC, 157 U.S.App.D.C. 235, 483 F.2d 1238, 1260 (1973); International Harvester Co. v. Ruckelshaus, 155 U.S.App.D.C. 411, 478 F.2d 615, 629-31, 649 (1973); Appalachian Power Co. v. EPA, 477 F.2d 495, 503 (4th Cir. 1973); Walter Holm & Co. v. Hardin, 145 U.S.App. D.C. 347, 449 F.2d 1009, 1016 (1971); American Airlines, Inc. v. CAB, 123 U.S.App.D.C. 310, 359 F.2d 624, 632-33 (en banc), *cert. denied*, 385 U.S. 843 (1966).

See also, Williams, *"Hybrid Rulemaking" under the Administrative Procedure Act: A Legal and Empirical Analysis*, 42 U.CHI.L.REV. 401 (1975); Wright, *Court of Appeals Review of Federal Regulatory Agency Rulemaking*, 26 ADMIN. L.REV. 199 (1974); Wright, *The Courts and the Rulemaking Process: The Limits of Judicial Review*, 59 CORNELL L.REV. 375 (1974). Verkuil, *Judicial Review of Informal Rulemaking*, 60 VA.L.REV. 185, 234-49 (1974); Note, *The Judicial Role in Defining Procedural Requirements for Agency Rulemaking*, 87 HARV.L.REV. 782 (1974); Hamilton, *Procedures for the Adoption of Rules of General Applicability: The Need for Procedural Innovation in Administrative Rulemaking*, 60 CALIF.L.REV. 1276, 1313-30 (1972); Claggett, *Informal Action —Adjudication—Rulemaking: Some Recent Developments in Federal Administrative Law*, 1971 DUKE L.J. 51, 78.

The Government concedes that "basic considerations of fairness may under exceptional circumstances" require additional procedures in "legislative-type proceedings," but contends that the procedures here were more than adequate.[24] Thus, we are called upon to decide whether the procedures provided by the agency were sufficient to ventilate the issues.[25]

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[24] Respondent's brief at 13-14.

[25] We disagree with Intervenor Baltimore Gas & Electric Co.'s threshold objection that the public interest intervenors failed to make a proffer of the specific issues and witnesses which they claimed could not adequately be explored without cross-examination as required by International Harvester Co. v. Ruckelshaus, *supra* note 23, 478 F.2d at 630-31; *see also* American Airlines v. CAB, *supra* note 23, 359 F.2d at 632-33. The public-interest intervenors submitted a thorough legal brief demanding cross-examination and discovery rights. CNI-UCS Statement with Respect to Legal Considerations of the Proposed Regulations on the Nuclear Fuel Cycle, 20-29; II-J.A. 225, 245, 254. The first point made by Mr. Roisman, attorney for the public interest intervenors, in the oral hearings was a request to be allowed to go behind the reassurances offered by Dr. Pittman:

> The Atomic Energy Commission continues to take subjects as important as nuclear waste disposal and treat them in a cavalier manner that we find them treated in this environmental survey. They continue to raise the issues of the environmental [sic] fuel cycle in the most obtuse manner, and subject it to this type of a legislative hearing, while refusing to face up to the fact that the public demands the right to cross-examine and to have discovery on these issues, that we are not satisfied with Mr. Pittman's well intentioned, but, we think, not at all well explained position with regard to the ability to handle nuclear wastes for hundreds of thousands of years. He has in his own words referred to it as a program of perpetual management . . . . I think the public deserves the right to ask the question, What does that mean?

II-J.A. 121-22. That was sufficient to focus the agency's at-

A few general observations are in order concerning the role of a court in this area. Absent extraordinary circumstances, it is not proper for a reviewing court to prescribe the procedural format which an agency must use to explore a given set of issues.[26] Unless there are statutory directives to the contrary, an agency has discretion to select procedures which it deems best to compile a record illuminating the issues.[27] Courts are no more expert at fashioning administrative procedures than they are in

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tention on Dr. Pittman's testimony as in the category of "soft and sensitive subjects and witnesses." International Harvester, *supra*, 478 F.2d at 631. *See infra*, pp. 32-33.

To be sure, the public interest intervenors did not show that these issues could not be explored except through cross-examination; nor did they attempt such a showing. Their argument, as we understand it, is not that cross-examination was required *per se*, but that the procedures utilized by the Commission were in the aggregate inadequate sufficiently to ventilate the issues. They recognize, for example, that exploration of the underlying methodology of the Environmental Survey could have been facilitated by adequate discovery, as an alternative to cross-examination of the staff. *See* Petitioner's Brief, 13-15.

[26] The Supreme Court has recently cautioned against requiring an agency to use particular procedures on remand:

> At least in the absence of substantial justification for doing otherwise, a reviewing court may not, after determining that additional evidence is requisite for adequate review, proceed by dictating to the agency the methods, procedures, and time dimension of the needed inquiry and ordering the results to be reported to the court without opportunity for further consideration on the basis of the new evidence by the agency.

FPC v. Transcontinental Gas Pipe Line Corp., 96 S.Ct. 579, 583 (1976) (per curiam) [footnote omitted].

[27] *See* NLRB v. Bell Aerospace Co., 416 U.S. 267, 292-95 (1974); SEC v. Chenery Corp., 332 U.S. 194, 203 (1947) (Chenery II); Siegel v. AEC, 400 F.2d 778, 783 (D.C.Cir. 1968).

the substantive areas of responsibility which are left to agency discretion.[28] What a reviewing court can do, however, is scrutinize the record as a whole to insure that genuine opportunities to participate in a meaningful way were provided, and that the agency has taken a good, hard look at the major questions before it.

We have sometimes suggested that elucidation of certain types of issues, by their very nature, might require particular procedures, including cross-examination.[29] In fact, we have been more concerned with making sure that the record developed by agency procedures discloses a thorough ventilation of the issues than with what devices the agency used to create the dialogue.[30]

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[28] That may be reflected in the finding that in most cases where the right to cross-examination was won on appeal, it was not actually used on remand, the parties instead agreeing on more flexible procedures such as written memoranda explaining technical methodology or informal staff conferences which better suited their needs. *See* Williams, *supra* note 23, 42 U.CHI.L.REV. at 436-37; 448-54.

[29] *See, e.g.*, International Harvester v. Ruckelshaus, *supra* note 23, 478 F.2d at 631 ("soft and sensitive subjects and witnesses"); *but cf.* O'Donnell v. Shaffer, 160 U.S.App.D.C. 266, 491 F.2d 59, 62 (1974) (Bazelon, C.J.): "the presence of technical issues in and of itself [does not] create a need for cross-examination."

[30] *See, e.g.*, Walter Holm & Co. v. Hardin, *supra* note 23, 449 F.2d at 849: "What counts is the reality of an opportunity to submit an effective presentation, to assure that the Secretary and his assistant will take a hard look at the problems in light of those submissions."; International Harvester v. Ruckelshaus, *supra* note 23, 478 F.2d at 631: "There was a meaningful opportunity to be heard. . . . The record reveals that the hearing officers did not propound the pre-submitted questions like robots; they were charged with conducting a hearing for the purpose of focusing information needed for decision and they quite appropriately 'followed up' on questions."; O'Donnell v. Shaffer, *supra* note 23, 491 F.2d at 62: "Here the agency's proceedings provided an adequate oppor-

Of necessity, assessing agency procedures requires that the reviewing court immerse itself in the record. Abstract characterizations are an unsatisfactory guide for determining what procedures are necessary in particular proceedings.[31] Alternative procedural techniques are usually available, and the absence of one device, such as cross-examination, may be compensated for by the sensitive use

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tunity for the airing of technical disputes. Appellants presented their evidence orally and in writing and questioned a supporter of the rule who testified at the hearing. The agency considered the evidence presented at the hearing in its 'Disposition of Petition.' On these facts, the procedures were adequate for the task at hand."; Ethyl Corp. v. EPA, No. 73-2205 (D.C.Cir., March 19, 1976) (en banc) (opinion of Wright, J.), slip op., 119-22, —— F.2d ——, ——, *cert. denied*, 44 U.S.L.W. 3719 (June 10, 1976), reviewing in detail the procedures used and the agency's lengthy opinion and concluding: "The complex scientific questions presented by this rulemaking proceeding were resolved in the crucible of debate through the clash of informed but opposing scientific and technological viewpoints." [Citation omitted.]

[31] *See* Wright, *supra* note 23, 26 ADMIN.L.REV. at 206-7; *id.*, 59 CORNELL L.REV. at 387-88.

Judge Tamm professes surprise that one who believes judges must avoid making "plausible-sounding, but simplistic, judgments of the relative weight to be afforded various pieces of technical data," Ethyl Corp. v. EPA, *supra* note 30 (Bazelon, C.J., concurring), slip op., 2, nonetheless believes review of agency procedures requires conscientious attention to the state of the record. Concur, n. 7.

There is, however, a difference crucial to the institutional competency of judges between the majority opinion here and the panel opinion, joined by Judge Tamm, which was overturned by the court *en banc* in *Ethyl*. The panel in *Ethyl* took it upon itself to decide that an expert agency had made "clear errors of judgment" in evaluating conflicting scientific studies. Slip op., 48. Here we merely systematically catalog the state of the record to verify that the agency has digested and addressed the major issues.

of substitutes.[32] If review is to be meaningful, it must focus on the actual operation of the whole range of procedures in a particular setting—including "contexts of fact, statutory framework, and nature of action."[33]

A prominent feature of the statutory context created by NEPA is the requirement that the agency acknowledge and consider "responsible scientific opinion concerning possible adverse environmental effects" which is contrary to the official agency position. (*see, e.g., infra* note 51). *Committee for Nuclear Responsibility, Inc.* v. *Seaborg*, 463 F.2d 783, 787 (D.C. Cir. 1971). NEPA requires that agencies see to it that "the officials making the ultimate decision [are] informed of the full range of responsible opinion on the environmental effects in order to make an informed choice." *Id.* The decision to proceed by rulemaking neither relieves the Commission of this obligation, nor permits it to depend solely on whatever contributions intervenors happen to make to develop a fair representation of scientific opinion for the record.[34]

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[32] *See* International Harvester v. Ruckelshaus, *supra* note 23, 478 F.2d at 631.

[33] Kennecott Copper Corp. v. EPA, 149 U.S.App.D.C. 231, 235, 462 F.2d 846, 850 (1972).

[34] At least in the NEPA context, an agency has an affirmative obligation to explore the issues in depth, rather than wait passively until an intervenor takes the initiative. *See* Calvert Cliffs' Coordinating Comm. v. AEC, *supra* note 14, 449 F.2d at 1118-19. There the Commission proposed to limit consideration to environmental issues "which parties affirmatively raise." The court held that was inconsistent with NEPA's "basic mandate":

> The primary responsibility for fulfilling that mandate lies with the Commission. Its responsibility is not simply to sit back, like an umpire, and resolve adversary contentions at the hearing stage. Rather, it must take the initiative. . . .

See also Scenic Hudson Preservation Conference v. FPC, 354 F.2d 608, 620-21 (2d Cir. 1965), *cert. denied*, 384 U.S. 941

In order to determine whether an agency has lived up to these responsibilities, a reviewing court must examine the record in detail to determine that a real give and take was fostered on the key issues. This does not give the court a license to judge for itself how much weight should be given particular pieces of scientific or technical data, a task for which it is singularly ill-suited. It does require, however, that the court examine the record so that it may satisfy itself that the decision was based "on a consideration of the relevant factors." [35] Where only one side of a controversial issue is developed in any detail, the agency may abuse its discretion by deciding the issues on an inadequate record.

A reviewing court must assure itself not only that a diversity of informed opinion was heard, but that it was genuinely considered. "[T]he dialogue that the APA's rulemaking section contemplates cannot be a sham." [36] Since a reviewing court is incapable of making a penetrating analysis of highly scientific or technical subject matter on its own, it must depend on the agency's ex-

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(1966) (agency duty to develop full record grounded on broad principles of administrative law); Note, *supra* note 17, 61 VA.L.REV. at 891: "when the record is deficient, the Commission may even have a duty to consider issues ignored by the parties."

In both *Calvert Cliffs* and *Scenic Hudson*, the court pointed out that poorly-financed public interest intervenors may lack the wherewithal to marshal technical evidence and bring it to the Commission's attention. *See also* American Public Power Ass'n v. FPC, 522 F.2d 142, 147 (D.C.Cir. 1975) (Bazelon, C.J., concurring); Citizens for Safe Power v. NRC, 524 F.2d 1291, 1304 (D.C.Cir. 1975) (Bazelon, C.J., concurring).

[35] Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402, 416 (1971). *Cf.* Ethyl Corp. v. EPA, *supra* note 30 (Bazelon, C.J., concurring), slip op., 2 n.7.

[36] Wright, *supra* note 23, 26 ADMIN.L.REV. at 206.

pertise, as reflected in the statement of basis and purpose, to organize the record, to distill the major issues which were ventilated and to articulate its reasoning with regard to each of them.[37]

An agency need not respond to frivolous or repetitive comment it receives. However, where apparently significant information has been brought to its attention, or substantial issues of policy or gaps in its reasoning raised, the statement of basis and purpose must indicate why the agency decided the criticisms were invalid.[38] Boilerplate generalities brushing aside detailed criticism on the basis of agency "judgment" or "expertise" avail nothing; what is required is a reasoned response, in which the agency points to particulars in the record which, when coupled with its reservoir of expertise, support its resolution of the controversy.[39] An agency may abuse its discretion by proceeding to a decision which the record before it will not sustain, in the sense that it raises fundamental questions for which the agency has adduced no reasoned answers.

(B.)

With these observations in mind, we turn to our examination of this record. The significance of Table S-3 is that it expresses in numerical terms the conclusion that the environmental effects of the fuel cycle, including waste

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[37] *See* Portland Cement Ass'n v. Ruckelshaus, 486 F.2d 375, 393-95 (D.C.Cir. 1973), *cert. denied*, 417 U.S. 921 (1974); *cf.* Automotive Parts & Accessories Ass'n v. Boyd, 407 F.2d 330, 338 (D.C.Cir. 1968) (statement of basis and purpose must be explicit enough to allow court "to see what major issues of policy were ventilated by the informal proceedings and why the agency reacted to them as it did").

[38] Portland Cement Ass'n v. Ruckelshaus, *supra* note 37, 486 F.2d at 393-94.

[39] *See* Wright, *supra* note 23, 26 ADMIN.L.REV. at 209-210.

disposal, are insubstantial.[40] The primary basis for these judgments is the data assembled by the staff in the draft Environmental Survey made public with the proposed rule. The conclusions reached by the staff in the Environmental Survey were in turn adopted without modification by the Commission as Table S-3 and embodied in the final rule. Thus, support for a rule limiting consideration of environmental issues to the numbers in Table S-3 must be found in one of three places: the Environmental Survey, the back-up documentation to which it refers, and the oral and written testimony offered at the hearing. It is to these sources we must look for a thorough ventilation of the underlying issues.

The Environmental Survey made public prior to the hearing was intended to "provide[] a basis for an informed consideration of the . . . environmental impact associated with the uranium fuel cycle . . . [and to] contain[] extensive references to background documents available to members of the public." 38 Fed.Reg. 49 (Jan. 3, 1973). Regarding most phases of the fuel cycle, these promises were fulfilled and the Environmental Survey did an adequate, even admirable job, of describing the processes involved. It assembles data on the consumption of resources, and discusses the risks of accidents and other hazards in detail, supporting the staff's conclusions with numerous references to the scholarly literature and to technical reports on file with the Commission. However, with regard to the two phases of the fuel cycle which are the focal points for this appeal, reprocessing and waste disposal,[41] that kind of detailed explanation

[40] *See supra* note 19.

[41] In a general way, "reprocessing" is that phase of the fuel cycle in which reusable portions of spent fuel are extracted for recycling and the remaining radioactive residues are concentrated. "Waste disposal," a misnomer for what is more appropriately termed "waste storage and management," refers to containment of wastes during the long periods necessary for them to decay naturally into non-toxic substances. *See supra* note 3.

and support for the staff's conclusions was noticeably absent from the Environmental Survey as originally published.

The only discussion of high-level waste disposal techniques was supplied by a 20-page statement by Dr. Frank K. Pittman, Director of the AEC's Division of Waste Management and Transportation. This statement, delivered during the oral hearings, was then incorporated, often verbatim, into the revised version of the Environmental Survey published after the comment period.[42] Dr. Pittman began his statement by acknowledging that he was "broadly involved" with the subject of high-level waste management since he heads the division of the AEC charged with "responsibility for the development, construction and operation of facilities for ultimate management of commercial high-level waste." [43]

Dr. Pittman proceeded to describe for the first time in public the "design concepts" for a federal surface reposi-

[42] *See* "Environmental Survey of the Uranium Fuel Cycle" (April, 1974) (hereafter "Revised Environmental Survey") G-23 n.18, II-J.A. 740.

For example, the discussion of the possibility of accidental release of wastes as a result of loss of coolant at *id.*, G-19-21, II-J.A. 736-737, is taken verbatim from Dr. Pittman's statement.

[43] II-J.A. 59. In Portland Cement Ass'n v. Ruckelshaus, *supra* note 37, 486 F.2d at 400 n.95, the court pointed out that where a "principal source of reliance by the agency" was "peculiarly subject to considerations of self-interest, more might be required than mere comments." Evaluation of a program by the in-house staff member charged with the responsibility for administering it falls within the intendment of that statement.

tory for retriveable storage of high-level waste.[44] This is essentially a warehouse in which sealed canisters containing cylinders of solidified nuclear wastes can be stored in water-filled basins recessed into the ground on a temporary basis (up to 100 years), until such time as a permanent waste disposal scheme is devised, when they can be removed.[45] While the "intended life" of the facility is only 100 years, some high-level wastes must be isolated for up to 250,000 years. *See supra* p. 7. Therefore, the Environmental Survey states, without further explanation, that in the future a "permanent" Federal repository for "geologic storage of high-level wastes" will be established and that the "Federal government will have the obligation to maintain control over the site *in perpetuity*." II-J.A. 724 [emphasis added].

Until recently the AEC planned to dispose of wastes by burying them deep inside abandoned salt mines. These plans were postponed indefinitely after a series of tech-

[44] The staff subsequently described the significance of Dr. Pittman's testimony as follows:

> When the [Environmental Survey] was published in November 1972, the data on the proposed Federal Repository for high level waste storage were limited to preliminary criteria and generalized statements. . . . The information in Dr. Pittman's statement is the first public release of the preliminary concepts for the Federal Repository and provides a summary of the current status and potential environmental effects of the high level waste interim storage facility and further AEC plans for longer term storage. The information from his testimony will be incorporated in the revised edition of the [Environmental Survey]. . . . The additional data presented by Dr. Pittman show that the interim high-level waste repository will be designed to have little environmental impact.

"Additional Information on Environmental Effects of the Uranium Fuel Cycle," II-J.A. 355-56.

[45] *See* Revised Environmental Survey, G-7, II-J.A. 724.

nical difficulties, including the discovery the salt mines might be susceptible to underground flooding. The Revised Environmental Survey devotes two sentences to recounting how prior waste disposal plans fared:

> It was planned to construct a Federal repository in a salt mine for long-term geological storage of solid high-level wastes by the mid 1970's. However, subsequent events have deferred the site selection and construction of such a facility.

II-J.A. 724. The "subsequent events" which led to the shelving of the salt mine plan are not discussed.[46]

[46] The difficulties encountered regarding the primary site considered, salt beds near Lyons, Kansas, have recently been summarized as follows:

> Although that site had been under consideration for many years by the [AEC], it was not until 1971 that the commission and its contractors discovered two major problems with it. One was a series of abandoned gas and oil drill holes in the area. Another was an adjacent salt mine's extensive use of water to dissolve out the salt—including a hydraulic fracturing technique which had resulted in the disappearance underground of some 175,000 gallons of water. Both discoveries cast doubt on the long-term safety and integrity of the proposed Lyons site, since it appeared possible that water might penetrate the area and allow radioactive wastes to escape.

Boffey, "Radioactive Waste Site Search Gets Into Deep Water," 190 SCIENCE 361 (Oct. 24, 1975).

After the planned site near Lyons, Kansas was abandoned, attention focused on salt beds in southeastern New Mexico. Unexpected problems have recently been encountered at this site, too. A test hole hit a large underground pocket of brine and explosive gases. Not only would the presence of these gases threaten the safety of workers at any facility, but a "second disturbing aspect is that the presence of the brine solution may indicate that fluids have been migrating underground, thereby threatening the integrity of the site." *Id.* As the result, the search for a suitable site has been moved once again, this time to an area several miles away.

Dr. Pittman's description of the new plan—now also postponed indefinitely [47]—to build a surface storage facility can only fairly be described as vague, but glowing. He begins:

> . . . I hope I will be able to allay what I feel are unwarranted fears . . . and show that the bugaboo of waste management cannot logically be used as a rationale for delays in the progress of an essential technology for meeting our growing power demands.
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> • • • •
>
> [T]here are available today proven methods for managing the high-level waste from the nuclear industry in a way which will assure first that man will not be adversely affected by the radioactivity either by external or internal contact with the waste itself or by exposure to the penetrating radiation which it generates, and second that the environment [sic] effects will be very small.

II-J.A. 59-60. In less than two pages, he set out a very general description of what the facility is supposed to do, II-J.A. 63-66, accompanied by several schematic drawings. These show the facility will have a cooling system, a transfer area and storage basins, but do not attempt to describe how they will be built and operated, what materials will be used, where such a facility might be located, or what it might cost to build and operate.

[47] By letter dated April 9, 1975, the Administrator of ERDA informed the Congressional Joint Committee on Atomic Energy that preliminary funding for a Retrievable Surface Storage Facility was being deleted from the fiscal 1976 budget request pending a "comprehensive reevaluation of the federal program in this critical and controversial area." *See* "ERDA Shelves a Nuclear Waste Storage Plan," 188 SCIENCE 345 (April 25, 1975).

As part of that review, we understand revised impact statements are being prepared concerning reprocessing and waste disposal. As those matters are not before us, we intimate no opinion regarding the extent to which they may cure the deficiencies in the present proceeding.

Recent Congressional testimony by ERDA officials indicates a return to the plan to bury wastes, although no site has been finally chosen. "Salt, Rock Formations Favored for A-Wastes," *Washington Post*, May 11, 1976, A-2, cols. 1-3.

Dr. Pittman then explains that "the major factor in the design of the repository for high-level waste is the technique used to remove the heat from the waste." II-J.A. 63. Decaying radioactive waste spontaneously gives off substantial heat and "[s]hould adequate provisions not be made to remove this heat . . ., the waste and the canister would melt." *Id.* A "meltdown" would result in what Dr. Pittman calls a "situation of considerable concern," which would involve the "loss of some fraction of the isolation of the radioactive material from the environment." II-J.A. 65. No attempt is made to describe how serious a radioactivity hazard would be presented.

In a paragraph which is carried over verbatim in the Revised Environmental Survey, II-J.A. 726, Pittman states:

> The Commission has carried out extensive evaluations of safety, reliability, operability, maintainability and economics of various methods for removing heat, and has essentially narrowed the area for further study to techniques using either water or air as the heat transfer medium.

II-J.A. 64. No citations are given for these studies; in fact, there are no references to back-up materials supporting any of Pittman's statement, or those portions of the Revised Environmental Survey drawn from it.[48]

[48] Following Dr. Pittman's presentation one of the presiding board members remarked:

> . . . one of the, I think, outstanding practices of the Staff has been in the past, at least as far as I can tell,

Again without benefit of details, Dr. Pittman offers conclusory reassurances that the proposed facility will be designed so that the possibility of a "meltdown" can be dismissed as "incredible":

> The probability of this situation occurring is prevented by a combination of engineered features including, (i) redundancy of power supply and other essential cooling systems; (ii) structural strength to withstand credible forces of nature—earthquake, tornado, etc.; (iii) combination of structural strength, plant security, etc., to withstand credible overt forces of man; (iv) modular basin cell construction which limits the number of canisters subject to a single catastrophic event.

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to meticulously document the assumptions that are made in the discussions. I find that that has not been done here. . . . I guess I must assume that one of the reasons that those assumptions have not been documented and clarified or justified in the purest sense of the word, is because of the time schedule required to get this thing on so we could get to hearings. Can it be assumed that if there is going to be a significant revision to this document that in those areas where assumptions are made, particularly where there is a statement to the effect that something is trivial, or insignificant, that somewhere there will appear in that same document some kind of justification based on data or a reference which one can go back to and find the source.

II-J.A. 116-17.

A staff member assured the questioner "[w]e will make every effort to go back and see if we can improve that," II-J.A. 118, and subsequently the staff submitted a 56 page document of "Additional Information on Environmental Effects of the Uranium Fuel Cycle," II-J.A. 352. However, less than two pages are devoted to the waste disposal issues addressed by Dr. Pittman, and these merely correct four minor numerical and typographical errors or omissions in his testimony. *See* II-J.A. 402-03. Nor does the Revised Environmental Survey fill in the gaps in Dr. Pittman's testimony.

> Thus, before a meltdown could occur, it would be necessary to have a series of failures of systems which will be engineered, constructed, and operated for maximum reliability under rigorous quality assurance programs before a situation could occur where sufficient water could not be added to and maintained in the cell to keep it from leaking or boiling dry. The timing for such a series of failures to result in uncorrectable situations is important. The individual failure of power systems for circulating the coolant would not result in pool water boiling for at least 16 hours. Various corrective actions may be taken any time within a week which would prevent cell water from boiling away. After the complete loss of water, an additional day would be required before the waste would begin to melt. The number of sequential failures required of highly reliable systems, combined with the long time periods available for repair and recovery from each, result in the judgment that this is an incredible incident.

II-J.A. 65-66. His unadorned conclusion is in turn incorporated verbatim into the Revised Environmental Survey."

Other than the broad reference to "structural strength, plant security, etc., to withstand credible overt forces of man", there is no discussion of how the facility would be protected from terrorism.[50] While Dr. Pittman says

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[49] *See* "Environmental Survey of the Uranium Fuel Cycle" (April, 1974) G-19-20, II-J.A. 736-737.

[50] When Dr. Henry Kendall, an expert witness for Consolidated National Intervenors, tried to raise the risks of terrorism, he met the following reception from the chairman of the hearing board:

> I have just one question . . . with regard to nuclear blackmail and the potential terrorist activities. What I am a little puzzled about is its relevance . . . . I say this with all due respect, Dr. Kendall; I guess those words are

"[v]arious corrective actions" might be taken to prevent a meltdown, none are specified.

Dr. Pittman concludes with the judgments that:

> . . . (1) the program being followed by the industry under AEC regulation and by the AEC offers assurance that the commercial high-level waste will be managed safely from its initial production; (2) the surface storage method, to be used by the AEC, is good for as long as adequate human surveillance and maintenance effort is continued; (3) the probability that work currently under way will demonstrate the use of bedded salt as a safe. acceptable. ultimate disposal method within the next ten to fifteen years is very high; (4) should bedded salt not prove to be acceptable, other acceptable geologic

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> exciting reading in the newspapers, but I would like to have [you] indicate the relevance between the responsibilities of the Atomic Energy Commission under the National Environmental Protection Act [sic] in these respects as against, at least, what I read to be the subject matter of your comments in this particular wise, and that is the military and potential security aspects of the transportation of nuclear materials. Do I make myself clear?

An attorney for the intervenors then explained that NEPA requires consideration of more than the "simplistic questions" of "how many fish will get hurt. . . ." The chairman responded:

> You see then, forgive me for using the word, a fusion somehow between what is known as, I understand, the impact on the environment as against the political and military security?

[Attorney]:

> Of course, what is precisely involved in political and military security is that someone threatens to do a heck of a lot of damage to the environment in exchange for something they want.

II-J.A. 213-16.

> disposal concepts offer reasonable probability of reaching a point of acceptability within two or three decades; and (5) the waste in initial storage will be easily retrievable for either near- or far-term disposal methods when they are developed.

II-J.A. 82. There is no discussion of how "adequate human surveillance and maintenance" can be assured for the periods involved, nor what the long-term costs of such a commitment are, nor of the dangers if surveillance is not maintained.[51] Nor is any explanation offered for Dr. Pittman's optimism regarding bedded salt as a disposal method, since the problems which have surfaced and delayed that program are not mentioned.[52] Nor does the statement anywhere describe what "other

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[51] A subsequent report to the Administrator of ERDA by a four-man task force, including Dr. Pittman, reflects a much less rosy assessment of the problems of reprocessing and waste disposal. NUCLEAR FUEL CYCLE: A REPORT OF THE FUEL CYCLE TASK FORCE, ERDA-33 (March, 1975).

The unanimous task force concluded, *inter alia*, "there are still many technical problems and uncertainties in the overall area of processing of spent fuel and properly managing its radioactive waste", *id.*, 40; "[t]he costs of storage and ultimate disposal . . . are very much higher than had previously been assumed . . . .", *id.*, 46; "[the public] fear[s] that the radioactive waste generated . . . will either be neglected, and thus place an unacceptable hazard potential on mankind, or be managed in a way that will place an unacceptable burden on future generations to assure continued public safety. [T]hese . . . fears . . . are supported by a fair segment of the scientific community—many of whom otherwise support the use of nuclear reactors for generation of electric power", *id.*, 49-50.

[52] *See supra* note 46. Contrary to Dr. Pittman's unexplained optimism, an article in SCIENCE recently termed finding a site for long-term disposal of radioactive wastes "one of the key unresolved problems of the nuclear era." Boffey, *supra* note 46, 190 SCIENCE 361 (Oct. 24, 1975).

acceptable geogologic disposal concepts" are under consideration.

When Dr. Pittman finished, no questions were put to him by the hearing board.[53] No cross-examination was permitted.

Based on Dr. Pittman's statement, the Revised Environmental Survey concludes that the resources consumed in waste storage will be minimal, that "under normal conditions" no radioactivity will be released, and that the possibility of a serious accident is "incredible." [54] In short, based on the information in Dr. Pittman's statement, the Commission concluded that the future environmental effects from the disposal of high-level nuclear wastes are negligible. This conclusion is in turn embodied in Table S-3, and further consideration of the issue terminated.

We do not dispute these conclusions. We may not uphold them, however, lacking a thorough explanation and a meaningful opportunity to challenge the judgments underlying them. Our duty is to insure that the reasoning on which such judgments depend, and the data supporting them, are spread out in detail on the public record. Society must depend largely on oversight by the technically-trained members of the agency and the scientific community at large to monitor technical decisions. The problem with the conclusory quality of Dr. Pitt-

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[53] One short comment was made concerning commercial disposal of low-level waste, II-J.A. 115, as was the observation, quoted *supra* note 48, regarding failure to provide back-up documentation.

The board's quiescence regarding Dr. Pittman is in marked contrast to its often hostile questioning of expert witnesses for the intervenors. *See, e.g., supra* note 50.

[54] Revised Environmental Survey, *supra* note 42, G-2-G-3, II-J.A. 719-720.

man's statement—and the complete absence of any probing of its underlying basis—is that it frustrates oversight by anyone: Commission, intervenors, court, legislature or public. Given the opportunity, Dr. Pittman might have provided convincing answers to many of the questions which his statement leaves untouched. Since that did not occur, however, his judgments must either be accepted at face value, or rejected out of hand.

Although the vagueness of the presentation regarding waste disposal made detailed criticism of its specifics impossible, *see* II-J.A. 257, the public interest intervenors did offer a number of more general comments concerning the Commission's approach. They criticized the Commission for a general "failure to distinguish between design objectives on the one hand and performance on the other," II-J.A. 124, noting that no consideration had been given actual experience with storage of wastes generated by weapons production. II-J.A. 272-74. They also questioned confident assertions by the AEC that long-term waste management is feasible, laying particular stress on the immense time periods involved which mock human institutions:

> Except for the storage of liquid wastes in tanks, for which experience from weapons production applies, all proposals for long term storage or disposal of high level waste from the nuclear power industry lie at the research and development stage.
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> • • • •
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> The impression is inescapable, in view of the present imprecise state of affairs, that no convincing statements exist regarding the long term environmental impact attending the storage and/or disposal of wastes from fuel reprocessing.
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> • • • •
>
> The times during which radioactive wastes must remain secure from the biosphere have no parallel

> in human affairs. Eight hundred years are required for fission products alone and millions of years if the fission products continue to be contaminated with transuranic elements at present levels. Fission technology requires that man issue guarantees on events far into the future, and it is not clear in most cases how this can be done. Institutional arrangements do not exist and never have existed to guarantee the monitoring of or attendance upon storage facilities over a millennium. In the range of a million years, serious geological uncertainties arise and even the survival of man may be doubtful. "In perpetuity" has little real meaning in human affairs.

II-J.A. 261-2. They reiterated repeatedly that the problems involved are not merely technical, but involve basic philosophical issues concerning man's ability to make commitments which will require stable social structures for unprecedented periods.[55]

The intervenors pointed out that storing wastes aboveground places a premium on stable human institutions for monitoring and surveillance, II-J.A. 275-76; that until plans for long-term disposal in the salt beds at Lyons, Kansas fell through, *see supra* note 46, the agency had itself rejected the idea of surface storage because of the surveillance problems. II-J.A. 210-11, 287-89.

After reviewing the record, the presiding hearing board isolated several areas of controversy which it felt ought to be addressed by the Commission in issuing the proposed rule. Included were the adequacy of the discus-

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[55] II-J.A. 275-76. An illuminating perspective is provided in D. Farney, *Ominous Problem: What to Do with Radioactive Waste*, 5 SMITHSONIAN MAG. 20, —— (1974):

> The entire recorded history of mankind is but a fraction of the 250,000-year storage time of plutonium. Neanderthal man appeared only about 75,000 years ago.

sion of waste disposal systems,[56] and the need for fuller background documentation. II-J.A. 498.

The Commission disposed of these issues summarily in its statement of basis and purpose accompanying the promulgation of the rule without attempting to articulate responses to any of the points which had been raised regarding waste disposal:

> Considerable information was presented at the hearing on high level waste storage utilizing a retrievable surface storage facility. A description was given of such facility, the normal radiological effluents, and a maximum credible accident.
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> • • • •
>
> While such a waste storage facility has not been constructed, preliminary conceptual designs have been developed using existing technology based on well established data and techniques.

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[56] The presiding board wrote:

> At the time the Environmental Survey was issued for public comment in the Rulemaking Proceeding, together with the proposed amendments to the Rules, the Survey did not contain data with regard to proposed waste disposal systems. During the course of the oral presentation, the Regulatory Staff offered for the record an extensive presentation by Dr. Frank Pittman regarding various methods for waste disposal which were in the planning stage, and, based upon such planning, assigned various values regarding assumed environmental impact of such waste storage facilities. It was argued that, in all other respects, the Survey dealt with the environmental impact of actual and existing facilities; but that, with respect to waste disposal, the Survey was unreliable in that it dealt with non-existent facilities; . . . .

II-J.A. 490.

While this is not an entirely accurate synopsis of the intervenor's position as set out above, it focused the Commission's attention on this aspect of the proceedings.

> The Commission believes that the Survey and hearing record provide an adequate data base for the regulation adopted.

39 Fed.Reg. 14189 (April 22, 1974); II-J.A. 507.1 [unnumbered page following 507].[37] Thus, to the limited extent that any give-and-take was fostered on the nuclear waste issues, the Commission, in its final decision, failed to address major contentions that were raised.

(C.)

In substantial part, the materials uncritically relied on by the Commission in promulgating this rule consist of extremely vague assurances by agency personnel that problems as yet unsolved will be solved. That is an insufficient record to sustain a rule limiting consideration of the environmental effects of nuclear waste disposal to the numerical values in Table S-3. To the extent that uncertainties necessarily underlie predictions of this importance on the frontiers of science and technology, there is a concomitant necessity to confront and explore fully the depth and consequences of

[37] We note that the Commission also promised to undertake "a more definitive assessment" of the environmental effects of waste storage as more information becomes available through subsequent environmental impact statements. 39 Fed. Reg. 14190 (April 22, 1974); II-J.A. 508.

While that is praiseworthy as an acknowledgment of the Commission's responsibility to reassess its actions in the light of later information, it cannot be used as a bootstrap to excuse the present rule cutting off further consideration in licensing proceedings.

We have already held in *Vermont Yankee, supra* p. 8, that the Commission may not refuse to consider the environmental effects of waste disposal when it licenses an individual reactor simply by promising to consider them later when it licenses facilities for waste disposal. We see no reason why that principle applies with any less force to accomplishing the same result through rulemaking.

such uncertainties. Not only were the generalities relied on in this case not subject to rigorous probing—in any form—but when apparently substantial criticisms were brought to the Commission's attention, it simply ignored them, or brushed them aside without answer. Without a thorough exploration of the problems involved in waste disposal, including past mistakes, and a forthright assessment of the uncertainties and differences in expert opinion, this type of agency action cannot pass muster as reasoned decisionmaking.[38].

[38] We reject the contention that Table S-3 is itself a "major Federal action" requiring an environmental impact statement. The Commission characterized this rulemaking as merely addressing "a procedural question involving the implementation of NEPA . . . ." 39 Fed.Reg. 14188. *Cf.* Gage v. AEC, 479 F.2d 1214, 1222 n.26 (D.C.Cir. 1973). Petitioners, however, claim Table S-3 has "substantive" effect, since it establishes values for environmental effects on which subsequent licensing decisions may turn. Reply brief at 12. While we agree that Table S-3 may have important decisional consequences by implying that fuel cycle problems are manageable, in the circumstances presented here, we do not believe these implications ripen into a proposal for agency action until they are incorporated into individual licensing decisions. *Compare* Aberdeen & Rockfish R.C. v. SCRAP, 422 U.S. 289, 320 (1975) *with* SIPI, *supra* note 11, *and* Sierra Club v. Morton, 514 F.2d 856 (D.C.Cir. 1975), *rev'd sub nom.* Kleppe v. Sierra Club, 44 U.S.L.W. 5104 (U.S., June 28, 1976). At that point an impact statement will be prepared with regard to the licensing decision. We do not read the statute as requiring more.

Petitioners also argue that Table S-3 violates NEPA because it is incomprehensible to "non-technical minds." Environmental Defense Fund v. Corp of Engineers, 348 F.Supp. 916, 933 (W.D. Miss.), *aff'd.*, 492 F.2d 1123 (5th Cir. 1972). We do not reach that issue. The defects, if any, may be cured by fuller explanation in a revised statement of basis and purpose, or in subsequent NEPA statements incorporating Table S-3.

[Continued]

Many procedural devices for creating a genuine dialogue on these issues were available to the agency—including informal conferences between intervenors and staff, document discovery, interrogatories, technical advisory committees comprised of outside experts with differing perspectives, limited cross-examination, funding independent research by intervenors, detailed annotation of technical reports, surveys of existing literature, memoranda explaining methodology. We do not presume to intrude on the agency's province by dictating to it which, if any, of these devices it must adopt to flesh out the record. It may be that no combination of the procedures mentioned above will prove adequate, and the agency will be required to develop new procedures to accomplish the innovative task of implementing NEPA through rulemaking. On the other hand, the procedures the agency adopted in this case, if administered in a more sensitive, deliberate manner, might suffice.[59] Whatever techniques

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[58] [Continued]

Finally, we reject the related argument that plenary consideration of alternatives was necessary in this proceeding. We agree with the Commission that this may be deferred until action is proposed to license particular disposal facilities. For purposes of this proceeding, provided a sufficiently conservative and credible assessment of a particular waste disposal method is used, it is not material that another method might turn out to be even more desirable. *See supra* note 13. Of course, we do not exclude the possibility that limited consideration of certain alternatives (*e.g.*, the consequences of not proceeding at all) may be necessary to meaningful judgments in a proceeding such as the present.

[59] Agencies are always free to adopt "hybrid procedures" beyond the minima prescribed by 5 U.S.C. § 553, and commonly do. United States v. Florida East Coast Ry., 410 U.S. 224, 236 n.10 (1973). In this case, the Commission elected to provide certain hybrid procedures in addition to those required by § 553—oral hearings and questioning by a presiding board. By listing other techniques, *supra* p. 39, which might aid the Commission in compiling an adequate record, we do not intimate that it must adopt any of them. What is of

the Commission adopts, before it promulgates a rule limiting further consideration of waste disposal and reprocessing issues, it must in one way or another generate a record in which the factual issues are fully developed.

Our colleague, concurring specially, expresses the view that there is "little to be gained other than delay" by remanding for additional proceedings, since it is "almost inevitable" that the Commission will reach the same result "after fully considering the problems and alternative methods of waste disposal."[60] Even if true, that would only supply an additional reason to require the Commission to acknowledge the risks and problems, as well as lay bare its own reasoning. Agencies are less likely

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concern to us is that the record after remand disclose a thorough ventilation of the issues.

On paper, the procedures used to supplement § 553 here were virtually identical to those approved by the court in International Harvester v. Ruckelshaus, *supra* note 23, 478 F.2d at 631, in which oral statements were allowed and the hearing board was authorized to ask questions submitted by the parties. However, in practice the procedures were administered quite differently in *International Harvester:* "[T]he hearing officers did not propound the pre-submitted questions like robots; they were charged with conducting a hearing for the purpose of focusing information needed for decision and they quite appropriately 'followed up' on questions." *Id.* In this case the board members asked no questions whatsoever of Dr. Pittman. *See supra* note 53.

[60] Concur at 5. According to Judge Tamm, on remand "the Commission may or may not adopt one of the majority's [procedural] suggestions, but will in any case seek to comply by mechanically generating more 'negative' information respecting current problems with disposal of high level radioactive wastes and then will 'overcome' this information with citations to favorable studies and articles." *Id.*, 4.

Stripped of rhetoric, this means that the Commission may reach the same result on an adequate record—which, of course, is why we remand rather than reverse.

to persist in the face of information publicly exposing the fallacies, if any, in their position. In any event, NEPA does not guarantee a particular outcome on the merits; rather, the statute mandates only a "careful and informed decisionmaking process" to enlighten the decisionmaker and the public.[61] In the rulemaking context, that requires the Commission to identify and address information contrary to its own position, to articulate its reasoning and to specify the evidene on which it relies.[62] The Commission may well reach the same conclusion on remand. But if it does so on such a record, the Congress, the courts, and the public will all know where we stand.

* * * *

[61] *See* Calvert Cliffs' Coordinating Comm. v. AEC, *supra* note 14, 449 F.2d at 1115. *See also*, Comm. for Nuclear Responsibility, Inc. v. Seaborg, *supra*, 463 F.2d at 787; NRDC v. Morton, *supra* note 15, 458 F.2d at 833.

[62] Evidently Judge Tamm would permit Dr. Pittman to supplement his testimony without giving those who disagree an opportunity to criticize or comment on the new material (*e.g.*, "without reopening the oral proceeding," Concur at 3). We would not agree.

Unlike explanation of the *Commission's* rationale, Dr. Pittman's testimony is part of the evidentiary support underlying the proposed rule. *Cf.* Concur at 7. Both rudimentary procedural fairness and § 553 require that the evidentiary "basis" for a proposed rule be subject to public scrutiny and comment. *See* Portland Cement Ass'n v. Ruckelshaus, *supra* note 37, 486 F.2d at 393 n.67; Mobil Oil Corp. v. FPC, *supra* note 23, 483 F.2d at 1251 n.39. This variant of the traditional adversary process permits other experts, and the public, to bring to bear the purifying effect of their comments.

At least where the existing record is inadequate to sustain a rule, an agency cannot buttress its case with additional data not subject to public comment. "If a particular rule rests on an extensive analysis of data or a complex prediction . . . the agency should not rely on any research methods or data which were not presented to the interested parties for comment or criticism." Wright, *supra* note 23, 59 CORNELL L.REV. at 383, n.34 (1974).

It has become a commonplace among proponents of nuclear power to lament public ignorance.[63] The public—the "guinea pigs" who will bear the consequences of either resolution of the nuclear controversy—is apprehensive. But public concern will not be quieted by proceedings like the present.

> I know no safe depository of the ultimate powers of the society but the people themselves; and if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion.[64]

* * * *

[63] *See, e.g.*, Remarks by USNRC Commissioner Edward A. Mason at MIT (March 4, 1976) *quoted* SCIENCE & GOV. RPT., 4 (April 1, 1976):

> So the biggest problem impeding the contribution of nuclear power in meeting the nation's energy needs seems to me to be the lack of informed public understanding. . . .
>
> * * * *

Edward Teller, "Nuclear Salvation," NEWSWEEK (May 17, 1976) at 15:

> Indeed, there is no better subject with which to scare people than nuclear energy. What is new, what is not completely understood, is always frightening. But nuclear energy is a special case. It comes from a remote part of research that, in the minds of many people, borders on science fiction. It was developed in wartime and shrouded in secrecy. It came to the attention of mankind when, in two strokes, more than 100,000 people were killed in the final days of a terrible war. . . . Can we, in our democratic society, overcome unreasonable fears?

[64] Thomas Jefferson, Letter to William Charles Jarvis (Sept. 28, 1820).

The Commission's action in cutting off consideration of waste disposal and reprocessing issues in licensing proceedings based on the cursory development of the facts which occurred in this proceeding was capricious and arbitrary. The portions of the rule pertaining to these matters are set aside and remanded.[45]

[45] We are aware of suggestions that where agency action is based on an inadequate record, the appropriate remedy may be to remand for supplementation rather than a declaration that the rule or order is invalid. *See* Leventhal, *Environmental Decisionmaking and the Role of the Courts*, 122 U.PA.L.REV. 509, 539 (1974). *But cf.* Camp v. Pitts, 411 U.S. 138, 143 (1973): If the decision of the agency "is not sustainable on the administrative record made, then the . . . decision *must be vacated* and the matter remanded . . . for further consideration." *quoted* F.P.C. v. Transcontinental Gas Pipe Line Corp., *supra* note 26, 96 S.Ct. at 582 [emphasis added].

Separate Statement of Chief Judge BAZELON:

I add a word of my own on some of the broader implications of Judge Tamm's concurrence.

I agree that courts should be reluctant to impose particular procedures on an agency. For example, requiring cross-examination in a rulemaking proceeding is radical therapy, which may cause the patient to suffer a slow, painful death. "There is a not insignificant potential for havoc . . . [which is] likely to be disproportionate to the values achieved. . . ." *International Harvester Co. v. Ruckelshaus*, 478 F.2d 615, 631 (D.C.Cir. 1973). But I reject the implication that any techniques beyond rudimentary notice and comment are needless "over-formalization" of informal rulemaking. Concur at 5. Unhappily, no such bright line can be drawn between rulemaking and adjudicatory proceedings.[1]

[1] The concurrence relies on Wright, *The Courts and the Rulemaking Process: The Limits of Judicial Review*, 59 CORNELL L.REV. 375 (1974), which explicitly assumes an idealized model differentiating sharply between "policy-type rules or standards, on the one hand, and proceedings designed to adjudicate particular cases on the other." *Id.*, 386. This model posits that accurately determining facts is relatively unimportant in rulemaking because the "ultimate shape of the rule seldom 'follows from the facts.'" *Id.*, 379 n.15. Based on this conceptual distinction, drawn from Bi-Metallic Investment Co. v. State Bd. of Equalization, 239 U.S. 441 (1915), it is argued "An adjudication is fair to the individual only if the facts are accurately found. . . . [I]n the rulemaking context, fairness is not identified with accuracy, and procedures designed to maximize accuracy at the cost of all other values are simply inappropriate." *Id.*, 379.

With all due respect, this assumes away the hybrid rulemaking problem which arises primarily when rulemaking procedures are used in contexts where accurate fact-finding *is* of high relative importance. *See infra* p.2 and n.3.

The purpose of rulemaking was to allow public input on policy, whereas adjudication was designed to resolve disputed facts. *See supra* note 1. However, in response to the "paralysis" of the administrative process in the last decade, rulemaking has been expanded into fact-intensive areas previously thought to require adjudicatory procedures.[2] Administrative proceedings are now common which do not fit neatly into either the rulemaking or adjudicatory category. These new proceedings are "hybrids" in the sense that they involve issues of general applicability which can be treated efficiently only in generic proceedings, but nonetheless involve factual components of such relative importance that a greater assurance of accuracy is required than that which accompanies notice and comment procedures.[3]

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[2] *See, e.g.*, United States v. Allegheny-Ludlum Steel Corp., 406 U.S. 742 (1972); United States v. Florida East Coast Ry., 410 U.S. 224 (1973) (ratemaking).

[3] The development of scientific or technical standards is a prime example. These decisions may involve both assessing scientific evidence, and also a "legislative" or policy component as to what level of risk is "safe," and how uncertainties are to be valued. *See* Handler, *A Rebuttal: The Need for a Sufficient Scientific Base for Governmental Regulation*, 43 GEO.WASH.L.REV. 808, 809 (1975).

The relative centrality of the fact-finding and policy-making components may vary depending on the precise regulatory scheme and the state of knowledge. *Compare* Ethyl Corp. v. EPA, No. 73-2205 (D.C.Cir., March 19, 1976) (en banc) (legislative policy decision) *with* Portland Cement Ass'n v. Ruckelshaus, 486 F.2d 375, 390-402 (D.C.Cir. 1973), *cert. denied*, 417 U.S. 921 (1974).

The present proceeding was devoted almost entirely to technical fact-finding. The Commission characterized its purpose as data-gathering, rather than an analysis of alternatives or costs and benefits, 39 Fed.Reg. 14188, and specifically disclaimed that the values arrived at represented "safe" operating limits. *Id.*, 14190. This was simply not, as Judge Tamm states, a proceeding to arrive at an "administrative

The need for reliable fact-finding does not necessarily imply transplanting trial-type procedures. Factual issues in hybrid proceedings tend to be complex scientific or technical ones involving mathematical or experimental data, or other "legislative facts" [4] peculiarly inappropriate for trial-type procedures. Agencies should innovate procedural formats responsive to the new problems created by hybrid rulemaking. Some agencies (such as FDA and EPA) have already begun to do so.[5]

Decisions in areas touching the environment or medicine affect the lives and health of all. These interests, like the First Amendment, have "always had a special claim

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weighing of risks and benefits of additional reactors," Concur at 7, or to decide "whether licensing an additional reactor is worth the additional environmental risk . . . ." Concur at 5.

[4] *See* 2 Davis, Administrative Law Treatise § 15.03 (1958):

> When a court or an agency finds facts concerning the immediate parties—who did what, where, when, how, and with what motive or intent—the court or agency is performing an adjudicative function, and the facts are conveniently called adjudicative facts. . . .
>
> Stated in other terms, the adjudicative facts are those to which the law is applied in the process of adjudication. They are the facts that normally go to the jury in a jury case. They relate to the parties, their activities, their properties, their businesses. Legislative facts are the facts which help the tribunal determine the content of law and of policy and help the tribunal to exercise its judgment or discretion in determining what course of action to take. Legislative facts are ordinarily general and do not concern the immediate parties.

[5] Judge Tamm raises the specter that the "entirely predictable" response by administrators to "procedural refinements" will be so many adjudicatory procedures that "the advantages of informal rulemaking as an administrative tool are lost in a heap of judicially imposed procedure." Concur

to judicial protection." [6] Consequently, more precision may be required than the less rigorous development of scientific facts which may attend notice and comment procedures.

Despite the controversy surrounding the proper standard of review in informal rulemaking cases, *see* Concur at n.2, there is less disagreement on this essential point than meets the eye. With customary perspicacity, Judge Friendly has observed that often it does not really matter much whether a court says the record is remanded because the procedures used did not develop sufficient evidence, or because the procedures were inadequate.[7] *From*

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at 6. Adjudicatory forms are no talisman which would guarantee an agency an adequate record.

Moreover, Williams, *"Hybrid Rulemaking" Under the Administrative Procedure Act: A Legal and Empirical Analysis*, 42 U.CHI.L.REV. 401 (1975), points out that the hybrid rulemaking cases have not in fact had that kind of impact on agency behavior. *Id.*, 425, 428, 448. Contrary to Judge Tamm's statement that cross-examination afforded only delay and something to be traded off for "substantative concessions," Concur at n.6, Williams actually discovered that the parties were able to agree on *procedural* innovations which better met their needs and were less time-consuming than cross-examination. *See* Majority Op., *supra* note 28.

[6] Environmental Defense Fund, Inc. v. Ruckelshaus, 439 F.2d 584, 598 (D.C.Cir. 1971) (Bazelon, C.J.). *See also* Leventhal, *Environmental Decisionmaking and the Role of the Courts*, 122 U.PA.L.REV. 509, 512-13 (1974).

[7] In discussing the article by Judge Wright, *supra* note 2, on which the concurrence relies, Judge Friendly writes:

> A judge not in the arena must wonder whether the war Judge Wright is waging with his colleagues is not in some degree semantic. . . . One can hardly quarrel with the conclusion that if a reviewing court finds that the procedures followed by the agency in adopting a rule have not produced a body of evidence enabling it to pronounce the required benediction, the court must remand. . . . It is thus not too consequential whether a court invalidates a rule on the ground that the procedures have not developed substantial evidence to support it or even evidence adequate to rebut a claim that it is arbitrary and capricious, or, instead, takes the route of prescribing ad hoc procedural requirements in addition to those of section 553. . . . Both roads lead to the conclusion that an administrator engaged in rulemaking governed by the APA cannot always be sure that rudimentary notice and comment procedures, even if they measure up to Judge Wright's salutary specifications, will always suffice.

Friendly, *Some Kind of Hearing*, 123 U.PA.L.REV. 1267, 1313-14 (1975) [footnotes omitted].

[8] The logic of Judge Tamm's position that the "deficiency" here is not with the procedures used to make a record, just with the "record generated," Concur at 2, totally escapes me.

Judge Tamm also criticizes the court for failing to tell the Commission "in precise terms" how to achieve a "thorough ventilation" of the factual issues. Concur at 3. He apparently finds greater specificity in an instruction to the Commission to provide "an explanation of the basis" of its conclusions. Concur at 7.

the standpoint of the administrator, the point is the same: the procedures prescribed by § 553 will not automatically produce an adequate record. Thus, although Judge Tamm vehemently opposes the concept of procedural review of informal rulemaking, he agrees to send this case back for a fuller development of the facts *even though the dictates of § 553 were followed.*[8]

Of course, important differences remain *from the standpoint of a reviewing court.* I am convinced that in highly technical areas, where judges are institutionally incompetent to weigh evidence for themselves, a focus on agency procedures will prove less intrusive, and more likely to improve the quality of decisionmaking, than judges "steeping" themselves "in technical matters to determine whether the agency has exercised a reasoned discretion." *See Ethyl Corp.* v. *EPA*, No. 73-2205 (D.C.Cir., March 19, 1976)

(en banc) (Bazelon, C.J., concurring), *cert. denied*, 44 U.S.L.W. 3719 (June 10, 1976).[9]

[9] *Cf.* Lathan v. Brinegar, 506 F.2d 677, 693 (9th Cir. 1974) (en banc):

> We think that the courts will better perform their necessarily limited role in enforcing NEPA if they apply [the "without observance of procedure required by law" standard of 5 U.S.C.] § 706(2)(D) in reviewing environmental impact statements for compliance with NEPA than if thy [sic] confine themselves within the straight jacket of [the "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" standard of 5 U.S.C.] § 706(2)(A).

See also Ohio v. Wyandotte Chem. Corp., 401 U.S. 493, 504 (1971) (original jurisdiction declined in pollution case involving complex, novel and technical factual questions):

> . . . Ohio is raising factual questions that are essentially ones of first impression to the scientists. The notion that appellate judges, even with the assistance of a most competent Special Master, might appropriately undertake at this time to unravel these complexities is, to say the least, unrealistic. Nor would it suffice to impose on Ohio an unusually high standard of proof. That . . . would not lessen the complexity of the task of preparing responsibly to exercise our judgment, or the serious drain on the resources of this Court it would entail.

TAMM, *Circuit Judge, separate statement concurring in result*:

Licensing a nuclear reactor unquestionably constitutes a "major Federal action[] significantly affecting the quality of the human environment" requiring a "detailed" environmental impact statement under section 102 (2)(C) of NEPA, 42 U.S.C. § 4332(2)(C)(1970). Approval of such a facility, which inevitably will produce high level radioactive wastes, some of which must be isolated from the "biosphere" for a quarter of a million years, undeniably necessitates an "irreversible and irretrievable commitment[] of resources" within the meaning of the Act. 42 U.S.C. § 4332(2)(C)(v). A panel of this court has previously indicated that NEPA requires potential environmental problems of this magnitude to be dealt with in advance of such a substantial commitment, not ignored until new commitments inevitably follow from the old. *See, e.g., Calvert Cliffs' Coordinating Comm. v. AEC*, 449 F.2d 1109, 1128 (D.C. Cir. 1971).[1] I agree with the majority that NEPA requires the Commission fully to assure itself that safe and adequate storage methods are technologically and economically feasible. It forbids reckless decisions to mortgage the future for the present, glibly assuring critics that technological advancement can be counted upon to save us from the consequences of our decisions. I further agree with the conclusion of the majority that it is impossible to determine from the record before us whether the Commission has fulfilled its statutory obli-

[1] A major purpose of NEPA was to avoid the limiting effect of incremental decisionmaking by confronting environmental problems before foreclosing alternative methods of dealing with them. *See* S. Rep. No. 296, 91st Cong., 1st Sess. 5 (1969), *quoted in* Majority 9. To this end, NEPA requires a thorough cost-benefit study in each case before undertaking major federal action affecting the quality of the human environment. Calvert Cliffs' Coordinating Comm. v. AEC, *supra* at 1128.

gation under NEPA in adopting the S-3 table, in effect deciding that the incremental environmental effect of storing the waste of an additional nuclear reactor is negligible, or whether it has uncritically adopted as its own the undocumented conclusions of a single witness that the waste storage issue is a "non-problem" with which the Commission need hardly concern itself at this time. Accordingly, the inadequacy of the record demands that we remand this case to the Commission in order to ensure that it has taken a hard look at the waste storage issue. I cannot, however, without qualification, endorse the approach the majority has taken to reach this result or its suggested disposition on remand.

The majority appears to require the Commission to institute further procedures of a more adversarial nature than those customarily required for informal rulemaking by the Administrative Procedure Act, 5 U.S.C. § 553 (1970).[2] The Commission chose to proceed by "hybrid" rulemaking below, allowing petitioners to present oral arguments before the Commission and subjecting participants to questions, but not permitting participants to cross-examine. Majority note 59. By so proceeding the Commission exceeded the minimum procedural requirements of section 553.[3] In my view, the deficiency

[2] The standard of review under section 553 has been the subject of considerable discussion in recent years, especially within this judicial circuit. *See, e.g.*, the cases and articles cited in Majority note 23.

[3] Section 553 imposes only three obligations on the rulemaker. First the rulemaker must give adequate and effective notice of "either the terms or substance of the proposed rule or a description of the subjects and issues involved." Secondly, he must "give interested persons an opportunity to participate . . . through submission of written data, views, or arguments with or without opportunity for oral presentation." Finally, the rulemaker must "incorporate in the rules adopted

is not with the *type* of proceeding below, but with the completeness of the record generated.[4] More procedure will not, in this case, guarantee a better record, and a better record can be generated without reopening the oral proceeding at this time. We cannot conclude confidently from this record whether the Commission's staff considered all relevant factors, including the facts petitioners call to our attention, in reaching the figures embodied in Table S-3; nor can we conclude from Dr. Pittman's oral statements, substantially devoid of documentation, whether these figures represented conclusions drawn from more exhaustive research into the waste storage problem conducted by the head of the Commission division charged with this task. If Dr. Pittman's conclusions were so based, I believe the Commission is entitled to accept them, provided, of course, it is assured that they are reasonably objective.[5]

a concise and general statement of their basis and purpose." 5 U.S.C. § 553 (1970). *See generally* Verkuil, *Judicial Review of Informal Rulemaking*, 60 VA. L. REV. 185 (1974).

The "concise and general statement" required by section 553 must be sufficiently complete and detailed to enable the court to accomplish its reviewing function, assuring itself that the agency has engaged in reasoned decisionmaking, has given serious thought to alternative rulings, and has provided reasoned explanations for controversial normative and empirical determinations. In short, "the reviewing court must satisfy itself that the requisite dialogue occurred and that it was not a sham." Wright, *The Courts and the Rulemaking Process: The Limits of Judicial Review*, 59 CORNELL L. REV. 375, 381 (1974).

[4] The majority also recognizes that the procedures utilized by the Commission might suffice "if administered in a more sensitive, deliberate manner." Majority 40.

[5] *See* Environmental Defense Fund, Inc. v. Corps of Engineers, 470 F.2d 289 (8th Cir.), *cert. denied*, 412 U.S. 931 (1972), in which the Eighth Circuit Court of Appeals held that, although NEPA requires agencies to evaluate objectively

I am also troubled by two other aspects of the majority opinion. First, I am distressed because I believe the majority opinion fails to inform the Commission in precise terms what it must do in order to comply with the court's ad hoc standard of review.[6] The majority sends the waste storage issue back to the Commission for a "thorough ventilation." This language, of course, means very little in procedural terms. In order to aid the Commission in filling in the gaps in the record, the majority enumerates a number of procedural alternatives in varying degrees of formality, some less intrusive into agency prerogatives than others. Majority 39. Then, heeding the Supreme Court's admonition in *FPC v. Transcontinental Gas Pipe Line Corp.*, 96 S.Ct. 579 (1976) (per curiam), that we may not, except in extraordinary circumstances, specify agency procedures on remand, the majority declines to give the Commission any direction as to which procedure or combination of them, will suffice. The Commission is thus left to decide which to adopt, further confused by the majority's statement that, "It may be that no combination of the procedures mentioned above will prove adequate, and the agency will be required to develop new procedures to accomplish the innovative task of implementing NEPA through rulemaking." Majority 39. Such specificity resembles a

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their projects, it does not require agency officials to be subjectively impartial. In other words,

> NEPA assumes as inevitable an institutional bias within an agency . . . and erects the procedural requirements of § 102 to insure that there is no way the decision-maker can fail to note the facts and understand the various arguments advanced by the plaintiffs if he carefully reviews the entire environmental impact statement.

Id. at 295 (quotation marks and citation omitted).

[6] Judicial imposition of procedural requirements on an ad hoc basis is criticized in Wright, *supra*.

standardized test in which there are numerous possible answers, including "all of the above," "none of the above," or "various combinations of the above." The result, I believe, is entirely predictable: the Commission may or may not adopt one of the majority's suggestions, but will in any case seek to comply by mechanically generating more "negative" information respecting current problems with disposal of high level radioactive wastes and then will "overcome" this information with citations to favorable studies and articles. Ultimately, of course, the Commission must decide which information to accept and which to reject, regardless of the type of procedure used. The majority opinion appears to recognize as much when it volunteers that, "On the other hand, the procedures the agency adopted in this case, if adminstered in a more sensitive, deliberate manner, might suffice." Majority 40 (citation omitted). This time, however, the decision whether licensing an additional reactor is worth the additional environmental risk would be one of policy or risk assessment and, consequently, would be reviewable only according to the customary "arbitrary, capricious" standard. *Amoco Oil Co. v. Environmental Protection Agency*, 501 F.2d 722, 741 (1974). I believe it almost inevitable that, after fully considering the problems and alternative methods of waste disposal and storage, the Commission will reach the same conclusion and therefore see little to be gained other than delay from imposing increased adversarial procedures in excess of those customarily required.[7]

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[7] It has been argued that those cases in which we have granted a limited right of cross-examination on remand have afforded little relief other than delay and a tool with which to bargain for substantive concessions. Williams, *"Hybrid Rulemaking" Under the Administrative Procedure Act: A Legal and Empirical Analysis*, 42 U. CHI. L. REV. 401, 436-48. It would seem, therefore, that the right of cross-examination at a rulemaking proceeding frequently is better to have and be denied than to utilize.

This brings me to my second, related concern with the majority's approach. I believe the majority's insistence upon increased adversariness and procedural rigidity, uneasily combined with its non-direction toward any specific procedures, continues a distressing trend toward over-formalization of the administrative decision-making process which ultimately will impair its utility. As Judge Wright has recently noted, the administrative response to overuse of judicial imposition of such ad hoc procedural refinements is easily foreseeable. Fearing reversal, administrators will tend to over-formalize, clothing their actions "in the full wardrobe of adjudicatory procedures," until the advantages of informal rulemaking as an administrative tool are lost in a heap of judicially imposed procedure. Wright, *The Courts and the Rulemaking Process: The Limits of Judicial Review*, 59 CORNELL L. REV. 375, 387-88 (1974).[8] The majority's

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[8] A further problem with over-reliance on the hybrid rulemaking approach has its roots in the hostility of some judges to all forms of substantive review of agency decisions. The line between substantive and procedural review is, of course, a hazy one. The same judges who most vehemently protest against judicial intrusions into the substance of administrative action, especially in highly technical areas, may not hesitate to require relatively more procedure of an agency when they dislike its substantive result. There is, I believe, a danger that judges will feel less restrained in requiring agencies to adopt procedures in excess of those required by the APA when review is couched in procedural, rather than substantive, terms. The preoccupation of the majority opinion in this case with the half-life of the plutonium atom and the myriad of geological and other technical difficulties one faces in attempting to safely store a highly toxic substance for a quarter of a million years demonstrates that judges cannot avoid the task of immersing themselves in difficult and often technical matters in order to evaluate administrative action and assure themselves that the agency has in fact dealt with all major issues. Because the relative environmental importance of the waste disposal issue before us is the subject of some

reliance upon the so-called "hybrid rulemaking" cases[9] for its conclusion that the procedures prescribed by section 553 are inadequate for resolution of the complex issues involved in this case and its insistence that the Commission adopt more formal adversary procedures are, I believe, misplaced. Admittedly, there are rare cases in which "basic considerations of fairness" require procedures more adversarial than those prescribed by section 553. *See* Majority 14-15, *quoting from* Respondent's Brief at 13-14. I cannot agree, however, that this case requires us to reach this issue. Remanding an agency decision with instructions to initiate such procedures is an extraordinary judicial remedy which, I believe, should be reserved for extraordinary cases.

The appropriate remedy at this point is not to impose ad hoc procedural requirements in an attempt to raise the level of petitioners' participation, already adequate under section 553, but to remand for an explanation of the basis of Dr. Pittman's statements and of the staff's numerical conclusions,[10] *i.e.* for the documentation which the majority finds so conspicuously lacking.[11] The

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controversy, arguments about whether our focus here is "procedural" or "substantive" may be more semantic than determinative.

[9] *See* the cases cited at note 23 of the majority opinion.

[10] As the majority states, due process considerations probably mandate that petitioners be allowed to comment upon any additional information assembled by the Commission. Neither the Constitution nor the Administrative Procedure Act, however, directs the Commission to allow additional oral presentation, cross-examination, or any other procedures in addition to those required by section 553.

[11] The extent of the required statement of basis may vary, of course, according to the precise demands and issues of each particular case, but, "[a]t a minimum, the statement should refer to relevant submissions by interested parties and should

Commission should be able to supply the court with a statement of the methods by which its staff arrived at the figures embodied in Table S-3 and by which Dr. Pitt-

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rebut or accept these submissions in an orderly fashion." Wright, *supra* at 381. This court has also distinguished between factual determinations and policy choices more peculiarly within the expertise of the administrative agency. In the former case, we commonly have insisted upon sufficient attention to the facts to enable the reviewing court to ascertain the underlying rationality of the resultant regulations. Amoco Oil Co. v. Environmental Protection Agency, 501 F.2d 722 (D.C. Cir.), *cert. denied*, 417 U.S. 921 (1974). In contrast,

> [w]here . . . the regulations turn on choices of policy, on an assessment of risks, or on predictions dealing with matters on the frontiers of scientific knowledge, we will demand adequate reasons and explanations, but not "findings" of the sort familiar from the world of adjudication.

Id. at 741.

Often, of course, an agency ruling will encompass both factual determinations and policy choices. This is such a case. For example, the decision to treat the waste storage issue through generic rulemaking because it is common to all licensing decisions is clearly a policy determination within the agency's special expertise which we should review only for clear abuse of discretion. *See* NLRB v. Bell Aerospace Co., 416 U.S. 267 (1974). The decision to license a particular reactor is also a policy or "assessment of risks" decision within the agency's discretion, provided it has adequately considered all underlying factual issues, including the waste storage issue, and has determined to its own satisfaction that safe methods of production and waste storage are already technologically and economically feasible. Finally, once so assured, the decision to postpone until later the question as to which of several feasible methods should be utilized is also, I believe, a policy, or risk assessment, decision.

This case, however, involves related factual determinations for which we must find support in the statement of basis required by section 553. Of particular relevance here is Table S-3, which reduces the environmental effect of licensing an additional reactor to certain numerical values and, in ef-

man concluded that the waste storage problem is already technologically and economically soluable. If it cannot, then we will have no choice but to invalidate the Commission's rule under the "arbitrary, capricious" standard; if it can, we should defer to the administrative weighing of risks and benefits of additional reactors.

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fect, concludes that it is negligible. The claimed bases for the judgments expressed in numerical terms in Table S-3 are the data assembled by the staff in the draft Environmental Survey, adopted without substantial modification as Table S-3 and thus embodied in the final rule. As the majority indicates, neither the Survey itself, the back-up documentation to which it refers, nor the oral and written testimony offered at the hearing adequately supports these factual conclusions with respect to the waste disposal issue. Majority 21-22. The detailed explanation which characterizes other portions of the Environmental Survey is notably absent from this portion.

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Volume 4

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ATOMIC ENERGY COMMISSION
WITH SELECTED ORDERS

July 1, 1967 to June 30, 1972

DOCKET No. 50-271
ALAB-56

IN THE MATTER OF VERMONT YANKEE NUCLEAR POWER CORPORATION (VERMONT YANKEE NUCLEAR POWER STATION)

Issued June 6, 1972

ATOMIC SAFETY AND LICENSING APPEAL BOARD:
SIDNEY G. KINGSLEY, *Chairman.*
DR. JOHN H. BUCK.
DR. LAWRENCE R. QUARLES.

Memorandum and Order

During the course of extended hearings for the issuance of an operating license for this nuclear power station,[1] the

[1] The provisional construction permit was issued on December 11, 1967.

Atomic Safety and Licensing Board has referred to us on December 29, 1971, under Subsection 2.730(f) of the Rules of Practice, 10 CFR Part 2, certain rulings concerning the scope of environmental review under 10 CFR Part 50, Appendix D, as revised September 9, 1971.[2]

The referral by the Licensing Board does not explicitly identify the questions to which it seeks answers. It cites the Board's rulings at certain pages of the transcript. Those rulings refer in general terms to proceedings which we have sought out in the record.

The referral originated in a motion of the intervenors Natural Resources Defense Council, Inc. (NRDC). It has two principal aspects:

a. The Board has referred to us oral rulings in which it sustained objections to questions and to interrogatories concerning the levels of radioactivity and the associated hazards which might be included in the operations of a reprocessing plant to which irradiated fuel from the Vermont Yankee plant might ultimately be sent for reprocessing, and the transportation of high level radioactive wastes from such a reprocessing plant to an ultimate storage area.

b. The Board has also referred a motion of NRDC which requested that, under Subsection 2.785(d) of the Rules of Practice, the substantive questions be certified to the Atomic Energy Commission on the asserted ground that a broad policy question is involved which should be determined by the Commission.

The original motion of NRDC sought orders of the Licensing Board which would open for consideration in the

[2] 36 Fed. Reg. 18071. See also 36 Fed. Reg. 18716, September 21, 1971; 36 Fed. Reg. 19153, September 30, 1971; 36 Fed. Reg. 21579, November 11, 1971; 36 Fed. Reg. 23900, December 16, 1971; 37 Fed. Reg. 864, January 20, 1972; 37 Fed. Reg. 9619, May 13, 1972; 37 Fed. Reg. 9779, May 17, 1972.

proceeding the environmental impact of spent fuel transportation and reprocessing, the disposition and ultimate storage of high level wastes, and the disposal of the contaminated structures of the nuclear generating station at the end of its useful life when it is decommissioned.

The Licensing Board denied the motion of NRDC, which, after the decision in *Calvert Cliffs' Coordinating Committee, Inc.* v. *Atomic Energy Commission*, 449 F.2d 1109 (D.C. Cir. 1971), presented its "Renewed Motion . . . for Full Consideration of Waste Handling Issues," for orders directing the staff to prepare a new detailed statement on environmental considerations, directing the applicant to respond to certain related specific interrogatories, and permitting NRDC to introduce evidence by direct testimony and cross-examination of witnesses. The motion was supported by the intervenor New England Coalition on Nuclear Pollution.

We consider at the outset the request that the Appeal Board certify to the Commission the substantive questions which are now in issue.

Under paragraph 2.785(a)(1) of its Rules of Practice, 10 CFR Part 2, the Commission has delegated to the Appeal Board the authority and the review function which would otherwise be exercised and performed by the Commission itself. See 36 Fed. Reg. 3837, 3838, February 27, 1971. Having been given the responsibility of relieving the Commission of this burden, it is our obligation to carry it out, subject to the Commission's review, unless we conclude that we are incapable of doing so without prejudice to the Commission's performance of its duties. See *1969 Annual Report, Administrative Conference of the United States*, pp. 17, 38-39. If the Commission in its wisdom should conclude that it should review on its own motion a decision or action of this Appeal Board, it will doubtless exercise its reserved power to do so. 10 CFR Section 2.786.

The motion of NRDC and the related rulings of the Licensing Board raise the question of the scope of Appendix D of Part 50 of the Commission's regulations. Appendix D is patterned upon the language of Section 102 of the National Environmental Policy Act of 1969, P.L. 91-190, 43 U.S.C. 4321 *et seq.* The Commission initially published Appendix D as an interim statement of general principles and procedures under that Act (35 Fed. Reg. 18469, December 4, 1970; see also 35 Fed. Reg. 5463, April 2, 1970). After the decision of the United States Court of Appeals for the District of Columbia Circuit in *Calvert Cliffs' Coordinating Committee* v. *Atomic Energy Commission,* 449 F.2d 1109 (July 23, 1971), it published a revised Appendix D (36 Fed. Reg. 18071, September 9, 1971).

The issues presented by the NRDC motion and the referred rulings, as they now lie before this Appeal Board, appear to be whether the Licensing Board is to consider the environmental hazards of transporting and reprocessing spent fuel from the facility, transporting and disposing of the high level wastes issuing from reprocessing, transportation and storage of low level wastes, and ultimate disposal of the contaminated structures of the facility itself at the end of its useful life; and whether the detailed environmental impact statement prepared by the staff must address each of these issues.

We have concluded that the Licensing Board should consider the transportation of spent fuel to a reprocessing plant, and the transportation from the nuclear power plant of high level wastes as well as of low level wastes, but shoud not consider in this proceeding operations of a reprocessing plant or the disposal of wastes resulting from reprocessing. We have also concluded that the environmental effects to be addressed by the staff should extend to and be limited to the same scope.

During the course of the proceeding NRDC has served voluminous interrogatories on various subjects, including

radioactive wastes and their disposal. The applicant has answered almost all of them, but has declined to answer two concerning reprocessing and the disposal of wastes from a reprocessing plant. The staff's draft detailed statement on environmental considerations, which has been filed since the Licensing Board's referral to us, has taken into account the handling of radioactive wastes at the plant and the transportation of irradiated nuclear material and solid radioactive waste from the plant.

Section A of Appendix D, 10 CFR Part 50, which prescribes the scope of the subject matter of the environmental study to be conducted in implementation of paragraph 102 (2)(C) of the National Environmental Policy Act, defines that subject matter in the same language as paragraph 102 (2)(C), 42 U.S.C. 4332(2)(C):

> "(i) the environmental impact of the proposed action,
>
> (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
>
> (iii) alternatives to the proposed action,
>
> (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
>
> (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented."

The applicant has included in its environmental study the transportation of irradiated fuel from the reactor to a fuel reprocessing plant, as well as the transportation of packaged radioactive material from the reactor to burial grounds for low level wastes. It has done so pursuant to a memorandum of September 1, 1971, distributed by the Director of Regulation by means of a circular letter of

September 3, 1971. The memorandum of September 1 was not a regulation adopted and published in accordance with Section 4 of the Administrative Procedure Act, 5 U.S.C. 553. It was a guide (see 36 Fed. Reg. 22851, n. 1, (1971) which did not establish a definitive regulatory requirement, but merely represented a solution considered acceptable as complying with requirements otherwise imposed.[3]

We conclude that the exclusion of the reprocessing function and its resulting wastes from the environmental study required by paragraph 102(2)(C) and by Appendix D of Part 50 is consistent with the purposes of the Environmental Policy Act and Appendix D and is proper.

Congress has directed in the Environmental Policy Act that an agency follow certain procedures in its decision making, and take into account the specified environmental factors; but it has not prescribed that any particular result shall follow when those factors have been taken into account.[4]

Whether the Environmental Policy Act and Appendix D of Part 50 should be so construed that the environmental study to be accomplished in this individual reactor licensing proceeding is to be extended to the reprocessing of fuel

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[3] If a statement of policy is intended to have binding effect, it is a "rule" (Sec. 2(c). Administrative Procedure Act, 5 U.S.C. 551(4)) which becomes effective when adopted pursuant to the procedures of Section 4. *National Labor Relations Board* v. *Wyman-Gordon Co.*, 394 U.S. 759, 763-765 (1969); *Texaco, Inc.* v. *Federal Power Commission* 412 F. 2d 740 (3d Cir. 1969); *National Motor Freight Traffic Association* v. *United States*, 268 F. Supp. 90 (D.C. 1967), aff'd 393 U.S. 18 (1968); *Seaboard World Airlines, Inc.* v. *Gronouski*, 230 F. Supp. 44 (D.C. 1944); *Devcon Corp*, 70 F.T.C. 1780, 20 Ad. L. 2d 292 (1966).

[4] *Calvert Cliffs' Coordinating Committee* v. *Atomic Energy Commission*, 449 F. 2d 1109, 1112, 1115 (D.C. Cir. 1971); *Committee for Nuclear Responsibility* v. *Seaborg*, 463 F. 2d 783 (1971), 3 E.R.C. 1126 (D.C. Cir. Oct. 5, 1971); *Upper Pecos Association* v. *Stans*, 452 F. 2d 1233 (10th Cir. 1971).

elements in a reprocessing plant and the disposition of waste resulting from that process requires examination of the relation of this reactor to the reprocessing function against the background of the nature, size and structure of the nuclear industry. We may take official notice of these general circumstances as descriptive of the nuclear industry at large.[5]

There are well over 100 commercial central station nuclear plants which are operable, under construction, or on order; more than 20 of these are already operating under license, about 40 have been granted construction permits and are in the course of operating license proceedings, about 15 more have been granted construction permits, and approximately another 40 are in construction permit proceedings. *Nuclear Industry 1971*, U.S. Atomic Energy Commission, 81. In addition to chemical reprocessing facilities operated by the Commission, three commercial reprocessing plants are in operation or under construction, and at least one other may be built in the near future. *Id.*, 133-136.

The record indicates that none of the nuclear fuel in the Vermont Yankee reactor will be replaced or reprocessed until 18 months after the commencement of operation, when about 4 percent of the fuel assemblies will be replaced. It is expected that about 40 percent of the fuel assemblies will be replaced 12 months later, and that 25 to 30 percent will be replaced each 12 months thereafter. As assemblies are removed from the reactor they will be stored in a storage pool at the site for 3 or 4 months at least, until they are shipped to a reprocessing plant. The spent fuel will be transported, under contracts to be let by Vermont Yankee, in heavily shielded casks by truck or rail, under applicable regulations of the Atomic Energy Commission (see e.g.,

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[5] 10 C.F.R. Sec. 2.743(i); *Attorney General's Manual on the Administrative Procedure Act*, 79-80; *Davis, Administrative Law Treatise*, Vol. 2 and 1970 Supp., Secs. 15.03-15.06.

10 CFR Parts 70, 71, 73) and of the Department of Transportation (49 CFR Parts 172, 173).

Aside from the spent fuel, the wastes which will be generated at the plant will consist largely of slightly contaminated water treatment resins and such miscellaneous slightly contaminated items as rags, floor sweepings, worn-out equipment and paper. A small portion of the resins, amounting to about 65 cubic feet per year, will be slightly higher in activity and will be transported in appropriately designed and shielded casks, probably by tractor-trailer.

We recognize that there will be an incremental environmental effect ultimately resulting from the operation of this reactor as the result of the operation of whatever reprocessing plants and disposal grounds may from time to time be used during the life of the plant. There is no way of ascertaining now which of the various reprocessing plants now in existence or to be constructed will from time to time receive some irradiated fuel elements from this plant for reprocessing during its estimated 40-year life. Reprocessing plants do not all use the same method of chemical separation of fissionable material from the wastes, and there is no reason to believe that during the useful life of the Vermont Yankee plant other methods will not be developed for that purpose.

Each reprocessing plant which has been and will be constructed is a "production facility" within the meaning of Paragraph 50.2(a)(3) of the Commission's regulations (10 CFR Part 50). In the interest of the protection of the public health and safety and the national security, each has been or will be subjected to full review under 10 CFR Part 50 and other pertinent regulations through the procedures established in 10 CFR Part 2 for such a facility. Each plant not yet licensed will be subjected to full environmental review as a part of the Commission's licensing action under Paragraph 102(2)(C) of the Environmental

Policy Act (10 CFR Part 50, App. D, par. A.1)—the procedure which NRDC now seeks, in effect, to invoke in this licensing proceeding for those same facilities *en masse*. The procedure are already in course for two reprocessing plants which are under construction or awaiting operation.[6]

The scope of the inquiry required by Paragraph 102(2)(C) is repeatedly defined, by the language of that section and as reflected in the language of Appendix D, as the impact, the consequences and the alternatives of "the proposed action," which in the present case is the licensing of a specific nuclear power reactor. The language of Section 102 directs that the environmental statement shall be accomplished "to the fullest extent possible." But "the proposed action" is the licensing of the Vermont Yankee reactor and not of other present and future facilities at other places, to be operated by other firms, and having at best a contingent and presently indefinable relation to this facility. Paragraphs A.3, A.4, and A.8 of Appendix D repeatedly refer to the environmental impact of "the facility" as defining the scope of the analysis. Paragraph A.10 refers to "the proposed licensing action," meaning the licensing of the particular facility which is before the Licensing Board and before us in a specific proceeding.

It is evident to us that evaluation of the environmental effects of the operation of one or more unidentifiable reprocessing plants, employing separation processes which are unidentified and which may or may not now be known or used, during the course of the forty-year life of the plant, is not possible at this time and in this proceeding. If the fuel elements of the Vermont Yankee plant pass through the process stream of one reprocessing plant or another now operating or to operate in the future, preceded and followed by the fuel elements and their constituents from other

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[6] *Matter of General Electric Company* (Docket No. 50-268); *Matter of Allied Gulf Nuclear Systems, Inc.* (Docket No. 50-332).

plants, we cannot see how any effect of that process on the environment, taking into account the factors enumerated in Subsection 101(b) and Section 102 of the Environmental Policy Act, 42 U.S.C. Subsection 4331(b), 4332, can be analyzed except as a part of the integrated analysis of the total operation of that specific reprocessing plant. This analysis will be conducted for each reprocessing plant to be built in connection with the licensing of that plant as a "facility." Any reprocessing plant now in existence, if not already required to be subject to environmental review (see 10 CFR Part 50, App. D, Section B, Section C, and paragraphs A.1, A.8, and A.14) will be subject to review before any modification is permitted which, in the language of Paragraph 102(2)(C)), is one "significantly affecting the quality of the human environment."

No one has indicated, and we are unable to perceive, any significant respect in which the Vermont Yankee plant will have any different relation from any other nuclear power station to the reprocessing part of the fuel cycle. The logical consequence of the position of NRDC is that in every reactor licensing proceeding it would be required by Paragraph 102(2)(C) that there be an environmental analysis of the operation of every reprocessing plant, present and future, to which its nuclear fuel might be sent for reprocessing. We cannot believe that this was the intent of Congress in directing that there be an environmental analysis in each case of "the proposed action."

In specifying the scope of the environmental analysis prescribed by Paragraph 102(2)(C) as applicable to nuclear facilities, Appendix D has reflected the guidance of the Council on Environmental Quality,[1] which has been designated by Congress in Subsection 102(B) and Title II of the Environmental Policy Act, 42 U.S.C. 4342, as the

[1] See 35 Fed. Reg. 18469, December 4, 1970; 36 Fed. Reg. 18071, September 9, 1971.

consultant to insure appropriate consideration of environmental amenities and values.

The conclusion we reach is consistent with the "Guidelines of the Council on Environmental Quality for Statements on Proposed Federal Actions Affecting the Environment" (36 Fed. Reg. 7724, 1971). Although the "actions" subject to the Guidelines "are not limited to" those enumerated explicitly in Paragraph 5, it is evident on reading the Guidelines as a whole that each environmental impact statement should be about a specific "project . . . involving a Federal . . . license" (e.g. par. 5(a)(ii), 5(b) or a specific "action" (par. 6(a)(i)(iii)(iv)). The Guidelines do not contemplate that the comprehensive environmental review of every "project" or "action" is required to include other "projects" or "actions." They thus speak of the effect of the proposed change upon "the area in question." (Par. 6(a)(ii); *cf.* pars. 9, 10). The "project . . . involving a Federal . . . license" (par. 5(a)(ii)) which we have before us is the operation of the Vermont Yankee reactor.

We are not concerned here with a situation in which a single "project" or "action" by the agency is being fragmented (*Named Individual Members of San Antonio Conservation Society* v. *Texas Highway Department*, 446 F.2d 1013 (5th Cir. 1971)), but one in which we are simply called upon to ascertain the scope of the environmental review to be conducted in this proceeding by defining the "action" in which the agency is engaged.

The staff's voluminous draft detailed impact statement on the environmental considerations relating to the proposed issuance of the Vermont Yankee operating license, which has been filed under the Guidelines of the Council on Environmental Quality and the Commission's Appendix D, will be referred for comment to other Federal agencies and State and local officials. The draft detailed statement includes, among other things, consideration of the radioactive

wastes to be produced, the waste treatment and waste handling systems, and the transportation of and disposition of solid radioactive wastes. It also considers the ultimate decommissioning and decontamination of the plant. The inclusion of these subjects in the staff's draft statement, with such further evidence as may be admitted and the Licensing Board's findings and conclusions under Appendix D, will dispose of so much of the motion of NRDC as relates to them.

It should not be assumed that the environmental effects of the handling and disposition of wastes are being neglected. The Commission has issued a guide for the submission of information for the evaluation of the environmental effects of facilities (37 Fed. Reg. 10013, 1972), and the development of these detailed criteria is continuing. Under Section 202 of the Atomic Energy Act, 42 U.S.C. 2252, the Commission is required to keep the Joint Committee on Atomic Energy "fully and completely informed with respect to all of the Commission's activities," and the Joint Committee is required to conduct and has conducted continuing studies of the activities of the Commission. The transportation and disposition of high level wastes have repeatedly been the subject of testimony before the Joint Committee, and have at times been the subject of extended hearings.[8]

The adoption of NRDC's position could as a practical matter call a halt to the licensing of individual reactors. No power reactor could be licensed until every present and future reprocessing plant was studied in some depth—

[8] See *e.g.*, Hearings, Industrial Radioactive Waste Disposal, January 28-30, 1959, February 2-3, 1959, July 29, 1959; Hearings Environmental Effects of Producing Electric Power, October 28-31, 1969, November 4-7, 1969, January 27-30, 1970, February 24-26, 1970; see also Selected Materials on Environmental Effects of Producing Electric Power, Joint Committee on Atomic Energy, 91st Cong., 1st Sess., August 1969.

a process that would in turn, we presume, be asserted to involve every present and future power reactor in order to determine just what wastes would pass through each reprocessing plant. The operation of a reprocessing plant and the disposition of its wastes can and should be evaluated in the licensing proceeding for each reprocessing plant. "Each action" and "each project" and its environmental effects will thus be considered in depth in the appropriate proceeding which will best disclose the elements to be weighed. Each such proceeding will provide "a useful point at which public pressure can be placed." F. S. Cohen, *Field Theory and Judicial Logic,* 59 Yale L.J. 238, 251-2 (1959). For a particular nuclear reactor, analysis will thus be in its own individual proceeding, such as this one; for a particular reprocessing plant, analysis will be conducted in its own licensing proceeding with consideration of all the circumstances on the basis of which its particular environmental effects can be intelligently considered: its location, surroundings, design, processing method, capacity, and similar individual characteristics. Only in this way can the purposes of the Environmental Policy Act be sensibly and effectively served.[9]

[9] The Administrative Conference of the United States has recommended reasonable limitation of alternatives to be considered in licensing procedures (Recommendation No. 15). Consideration of Alternatives in Licensing Procedures, 1969 Annual Report, Administrative Conference of the United States (1970), 45:

> "Court decisions, notably *Scenic Hudson Preservation Conference* v. *FPC*, [354 F. 2d 608 (2d Cir. 1965), *cert. denied*, 384 U.S. 941 (1966)] have emphasized that in licensing cases the Federal Power Commission must explore and give proper consideration to possible alternatives to the specific plan proposed by the applicant. This principle may in the future be applied to other licensing agencies. Since the range of possible alternatives in any case can be extensive and in some cases virtually unbounded, ways must be sought to control the scope and duration of licensing proceedings within manageable limits

Our careful study of the opinion of the Court of Appeals for the District of Columbia Circuit in *Calvert Cliffs' Coordinating Committee, Inc.* v. *Atomic Energy Commission,* 449 F.2d 1109 (1971), does not lead us to any different conclusion. Notwithstanding strong language in that case on the issues there presented, the Court's observations are addressed to the environmental study of "the proposal" or "the proposed action," in the language of the Environmental Policy Act, and to "a particular project" (449 F.2d at 1114, 1123).

In *Natural Resources Defense Council, Inc.* v. *Morton,* 458 F.2d 827, 3 E.R.C. 1558 at 1563, 1564 (January 13, 1972), the same Court has more recently pointed out that the required discussion of environmental effects need not be exhaustive, but is required only to extend to reasonable lengths:

> "The statute must be construed in the light of reason if it is not to demand what is, fairly speaking, not meaningfully possible. . . ."
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> • • • •
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> "So long as the officials and agencies have taken the 'hard look' at environmental consequences mandated by Congress, the court does not seek to impose unreasonable extremes or to interject itself within the area of discretion of the executive as to the choice of the action to be taken." [10]

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while meeting the requirements of the law.

"RECOMMENDATION

"Each agency which issues licenses . . . should seek to create procedures fitting its particular circumstances which will assure appropriate consideration of alternatives where necessary, and at the same time will permit effective administration of that agency's licensing functions."

[10] Citing the *Calvert Cliffs'* case.

That the Court was unanimous in the views we have quoted is evidenced in the separate opinion of Judge MacKinnon (458 F.2d 827 at 839, 3 E.R.C. at 1565-1570).

Our conclusion is reinforced by *Scientists' Institute for Public Information, Inc.* v. *Atomic Energy Commission,* Order of Court (D.C. March 24, 1972), in which the Court rejected the claim that, in connection with the construction of a proposed experimental fast breeder reactor, the environmental review must extend beyond the specific reactor to the environmental effects of such reactors at large.

NRDC has asserted that it has no forum other than this proceeding in which the broad environmental studies it seeks may be pursued. That is not the case. Each reprocessing plant has been and will be subject to the licensing procedures and standards established by the Commission's regulations, and in each such present and future proceeding a comprehensive analysis is being or will be made of its environmental effect. The Commission has procedures for rulemaking (10 CFR Part 2, Subpart H), under which the intervenors may by petition initiate rulemaking for the establishment of such regulations as they may choose to put forward. If in the judgment of the Commission it should be appropriate to resolve any specific questions which affect the industry as a whole, within the broad policy concerns which NRDC presents, then the rulemaking procedure is available.

Bearing in mind the purposes of the Environmental Protection Act, the Licensing Board will consider the extent to which the low level wastes, and the 65 cubic feet per year of resins which have a somewhat higher level of activity, will have an effect "significantly affecting the quality of the human environment" (National Environmental Policy Act of 1969, Sec. 102(2)(C), 42 U.S.C. 4332). In the exercise of the Licensing Board's discretion as to the extent to which evidence will be admitted or interrogatories allowed

with reference to such subjects, it would be especially appropriate to limit inquiry to a level of detail appropriate to the character of the potential hazard associated with these wastes, so long as the Board has in its judgment an adequate basis for the required findings and conclusions (10 CFR Subsection 2.743(c)).

Evaluation of the environmental aspects of the ultimate depository of the high level wastes resulting from reprocessing is at this time speculative, because it has not yet been determined what the nature or the location of the ultimate depository will be. That project will also of course be subject to independent analysis and procedures in compliance with the Environmental Protection Act, and it cannot be the subject of appropriate evaluation in this proceeding.

The transportation of low level wastes to burial grounds was included within the scope of environmental review specified in the memorandum of the Director of Regulation dated September 1, 1971, and issued on September 3, 1971. Although that document does not have the effect of a binding regulation, we adopt it to that extent for the purposes of this proceeding. Since the operation of such burial grounds is licensed under other provisions of the Commission's regulations (10 CFR Part 30), the environmental aspects of each facility of that character may be considered in other proceedings.

The motion of NRDC included the request that the environmental study extend to the ultimate decommissioning and decontamination of the facility at the end of its useful life of about 40 years. The decommissioning and decontamination of power reactors have already been conducted within the framework of our licensing procedures, furnishing a practical basis for analysis.[11] The applicant has not

[11] *Matter of General Electric Company*, Docket No. 50-18; *Matter of Puerto Rico Water Resources Authority*, Docket No. 115-4; *Matter of City of Piqua, Ohio*, Docket No. 115-2.

opposed the inclusion of decommissioning and decontamination in the environmental study, the staff has considered it in its draft impact statement, and it may be considered in the Licensing Board's Findings and conclusions.

During the course of the hearing the Licensing Board raised the question that compliance with the objectives of the Environmental Policy Act does not explicitly fall within the issues committed to the Licensing Board by the notice of hearing issued in this proceeding. This notice of hearing was superseded on March 1, 1972, with respect to environmental considerations by a supplemental notice of hearing which accomplished that purpose (37 Fed. Reg. 4733, (1972)).

Paragraph A(11) of Appendix D describes the functions to be performed by the Licensing Board with regard to the environmental statement and directs that its initial decision include findings and conclusions which may affirm or modify the contents of the final detailed statement prepared by the staff. The Licensing Board's findings and conclusions should of course be based upon all the evidence before it (Administrative Procedure Act, Subsection 7(c), 5 U.S.C. 556(d)), and the evidence on which they will be based will very largely be in the record already. The extent to which further evidence may be required or appropriate is for the Board to determine in its discretion. The Board should allow such additional evidence as in its judgment is requisite to satisfy the purposes of the Environmental Policy Act and to support the findings and conclusions required by Appendix D, permitting only such additional evidence to be admitted as is in its judgment relevant, material, and reliable and not unduly repetitious (10 CFR Subsection 2.743(c)). The weight to be given to various environmental considerations is of course for the Board to consider.

It is therefore ORDERED:

1. So much of the motion of NRDC as requests that the substantive questions involved in the referral by the Atomic Safety and Licensing Board dated December 29, 1971, be referred to the Commission is denied;

2. Evidence as to the environmental effects of the transportation of irradiated nuclear fuel from the Vermont Yankee nuclear power plant to a reprocessing plant or other destination shall be admitted;

3. Evidence as to the environmental effects of the reprocessing of irradiated nuclear fuel, and the disposal of wastes resulting from reprocessing, shall not be admitted;

4. Evidence as to the environmental effects of the transportation of low level wastes, and of high level solid wastes other than irradiated fuel, from the reactor to depositories shall be admitted;

5. Evidence as to the environmental effects of the disposal of low and high level solid wastes shall not be admitted;

6. Evidence as to the environmental effects of decommissioning and decontamination of the facility at the end of its useful life shall be admitted;

7. The scope of the final environmental statement to be prepared by the staff, and of the findings and conclusions of the Licensing Board pursuant to 10 CFR 50, Appendix D, shall be consistent with the foregoing.

BY THE ATOMIC SAFETY AND LICENSING APPEAL BOARD,
WILLIAM L. WOODARD, *Executive Secretary.*

ATOMIC ENERGY COMMISSION REPORTS

Volume 5

OPINIONS AND DECISIONS OF THE
ATOMIC ENERGY COMMISSION
WITH SELECTED ORDERS

July 1, 1972, to December 31, 1972

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD:

Sidney G. Kingsley, *Chairman*
Dr. John H. Buck
Dr. Lawrence R. Quarles

Docket Nos. 50-329, 50-330

In the Matter of

CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Memorandum and Order

(ALAB-60)

This is a proceeding on an application for construction permits for two pressurized water nuclear power reactors,

each with an initial power rating of 2452 thermal megawatts, to be located on the shore of the Tittabawasse River adjacent to the city limits of Midland, Michigan. An atomic safety and licensing board presiding over the hearing has referred to us, pursuant to 10 CFR 2.730(f), its order of March 10, 1972 concerning the extent to which all aspects of the fuel cycle "from the mining of uranium to the ultimate storage of high level wastes" are to be considered in this proceeding. The referral raises the question of the scope of the Commission's duties in conducting the environmental study required by Section 102(2)(C) of the National Environmental Policy Act, 42 U.S.C. 4332(2)(C).

The order of the Atomic Safety and Licensing Board is that the environmental effects of the mining, production and fabrication of nuclear fuel and the handling of spent fuel, including its chemical reprocessing and waste storage, are at issue in this proceeding only with respect to:

1. Transportation of fuel elements from a fuel fabrication plant to the reactor site;

2. Transportation of spent fuel elements from the reactor site to a fuel reprocessing plant;

3. Transportation of packaged radioactive material from the site to low level waste burial grounds; and

4. Radioactive discharges at the site and any other environmental effects directly associated with the handling and use of fuel at the site.

The Board's referral arises primarily from the contentions of several groups of intervenors. The State of Kansas is particularly concerned with the possibility that certain wastes from nuclear power reactors in general might be stored in the State of Kansas, but it has associated itself generally with the objections of the intervenors.[1] The

[1] The possibility of underground storage of nuclear wastes in abandoned salt mines in Kansas has been considered by the Commission, but other alternatives are now being explored. See H. Rept. No. 92-1066, 92d Cong. 2d. Sess. 11-12.

Board's referral is phrased in terms of the entire fuel cycle, as are the intervenors' contentions. The basic position of the intervenors is substantially similar to that of the intervenors in *Matter of Vermont Yankee Nuclear Power Corporation* (Docket No. 50-271), which was the subject of our memorandum and order of June 6, 1972,—AEC—.

The Commission's regulatory staff has filed a voluminous final detailed statement on environmental considerations after receipt of comments from the public, the Council on Environmental Quality, and other Government agencies as required by the Commission's regulations, 10 CFR Part 50, Appendix D.[2]

The Licensing Board has recommended that, under the authority of 10 CFR 2.785(d), we refer its rulings to the Commission as raising novel questions of law and policy. We decline to do so on the grounds on which we rested such a decision in *Matter of Vermont Yankee Nuclear Power Corporation*,—AEC—(June 6, 1972), and on the additional ground that, as to portions of the fuel cycle concerned with the reprocessing of irradiated nuclear fuel and the disposal of wastes after irradiation of fuel in a reactor, the Commission has permitted that decision to stand. See 10 CFR 2.786.

On the basis of our decision in *Vermont Yankee* and for the reasons expressed there, we hold that the order of the Licensing Board is affirmed as to the environmental effects of the handling of spent fuel, including chemical reprocess-

[2] 36 F.R. 18071, September 9, 1971. See also 36 F.R. 18716, September 21, 1971; 36 F.R. 19153, September 30, 1971; 36 F.R. 21579, November 11, 1971; 36 F.R. 23900, December 16, 1971; 37 F.R. 864, January 20, 1972; 37 F.R. 9619, May 13, 1972; 37 F.R. 9779, May 17, 1972.

ing and waste storage. And we now extend that interpretation of the National Environmental Policy Act to earlier stages of the fuel cycle.

The issue as to the part of the fuel cycle before the irradiation of fuel in a reactor raises the question which we considered in *Vermont Yankee;* the definition, for the purposes of the Environmental Policy Act, of the "project" or "action" of the agency under Section 102 of the Act, 42 U.S.C. 4332, and the Commission's regulations, 10 CFR 50, Appendix D. Again the question is identification of the "major Federal action significantly affecting the quality of the human environment" (National Environmental Policy Act, Section 102(2)(C), 42 U.S.C. 4332(2)(C) which this agency is now undertaking. What this agency is undertaking is consideration of the issuance of permits to construct two individual power reactors.

The fuel to be used in these reactors will be of a common type: an array of fuel rods each of which consists of uranium dioxide sealed in cylindrical zirconium alloy containers. The uranium is mined as ore which is later pulverized at uranium mills. It is then dissolved by chemical means at processing plants, and the dissolved uranium is recovered and calcined to yield uranium oxide powder. This powder is refined at various plants to yield essentially pure uranium oxide. By successive chemical processes, the oxide is converted to crystalline uranium fluoride. The fluoride is converted to a gas, uranium hexafluoride. The gas is enriched at gaseous diffusion plants; the diffusion process separates it into a product having a concentration of the isotope uranium-235 higher than in normal uranium, and a depleted fraction having a uranium concentration lower than normal.

The enriched uranium is converted by chemical processes to uranium dioxide (or some other solid compound), is prepared in an appropriate physical form, and is then clad in

zirconium alloy (or stainless steel) to produce fuel elements. After irradiation in a reactor, the fuel is reprocessed in a reprocessing plant by chemical solution of the fuel elements and the separation of useful uranium and plutonium for recycling for future use. Under current practice these successive processes of mining, milling, refining, enrichment, conversion, fabrication, irradiation, and reprocessing constitute the fuel cycle.[3]

There are over 200 uranium mines in this country alone, some underground and some of the open pit type, as well as other sources of uranium.[4] Twenty mills are in operation or scheduled to go into operation during the current calendar year; four plants are engaged in the conversion of feed materials to uranium hexafluoride, and there are competing foreign plants; there are three gaseous diffusion plants operated for the Commission; nine plants are engaged in later stages of processing, and fourteen plants are engaged in fabricating nuclear fuel.[5]

The facilities engaged in preparing fuel for use in power reactors are either operated or licensed by the Commission. From the time when the raw uranium ore is pulverized at the mill, uranium is source material as defined by the Atomic Energy Act, and its possession or other dealing with it is required to be licensed under the Act.[6] Enrich-

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[3] See Hogerton, *Atomic Fuel* (U.S. Atomic Energy Commission 1967); Singleton, *Sources of Nuclear Fuel* (U.S. Atomic Energy Commission 1968).

[4] Statistical Data of the Uranium Industry, January 1, 1972 (USAEC 1972, Report No. GJO-100.)

[5] The Nuclear Industry 1971 (USAEC Report No. WASH-1174-71, pp. 5, 18, 20, 23, 26-7, 39).

[6] Atomic Energy Act of 1954, Secs. 11(z),(62), 42 USC 2014(z); 2092; 10 CFR 40. An exemption for unrefined and unprocessed ore is based on the Commission's finding that there is no need to license it from the standpoint of either public health and safety or the national security. See 10 CFR 40.4(h), 40.13(a)(b).

ment in the gaseous diffusion plants [7] creates special nuclear material as defined by the Act, as to which such activities are also required to be licensed.[8] Facilities dealing with source material are thus operated under license,[9] and those involved with special material are licensed as either production facilities or as utilization facilities.[10]

When in December of 1970 the Commission published amendments of Appendix D of Part 50 of its regulations, implementing the Environmental Policy Act (35 F.R. 18469, December 4, 1970; see also 35 F.R. 5463, April 2, 1970), it defined the scope of the procedures thus prescribed as extending to power reactors and fuel reprocessing plants (Appendix D, par. 1, 35 F.R. 18473). It also directed that compliance with the Environmental Policy Act be extended to other facilities handling source material and special nuclear material in the various stages of the fuel cycle:

> Procedures and measures similar to those described in the preceding paragraphs of this appendix will be followed in proceedings other than those involving nuclear power reactors and fuel reprocessing plants when the Commission determines that the proposed action is one significantly affecting the quality of the human environment. The Commission has determined that such proceedings will ordinarily include proceedings for the issuance of the following types of materials licenses: (a) Licenses for possession and use of

[7] The gaseous diffusion plants are owned by the Commission and operated for it by operating contractors. See Hiestand and Florsheim, *The Atomic Energy Commission Management Contract Concept*, 29 Fed. B.J. 67(1969).

[8] Atomic Energy Act of 1954, Secs. 11 aa., 53, 42 USC 2014 (aa), 2073, 10 CFR 70.

[9] 10 CFR 40.

[10] Atomic Energy Act of 1954, Secs. 11 v., 11 cc., 42 U.S.C. 2014(cc); 10 CFR 50.2(a), 50.2(m), 50.2(b).

> special nuclear material for fuel element fabrication, scrap recovery and conversion of uranium hexafluoride; (b) licenses for possession and use of source material for uranium milling and production of uranium hexafluoride; and (c) licenses authorizing commercial radioactive waste disposal by land burial. (Appendix D, 35 F.R. 18474, now par. A. 14.)

The Commission soon adopted regulations explicitly requiring that an application for a license to process and use source material which will significantly affect the quality of the human environment be accompanied by an environmental report under Appendix D, imposing compliance with Appendix D as a prerequisite for a license, and imposing similar requirements for special nuclear material licenses.[11] The consequence is that each significant licensed activity at each successive stage of the fuel cycle requires a separate environmental statement complying with the Environmental Policy Act and with Appendix D.[12]

There is no material difference between this reactor licensing proceeding and any other, and the intervenors do not appear to claim that there is. What they assert is that, notwithstanding the existing elaborate pattern of compliance with the mandate of the Environmental Policy Act at the various stages of the fuel cycle, it is the Commission's duty in this (and in every other) individual reactor licensing proceeding to take evidence upon and to consider the environmental consequences of every aspect of the whole fuel cycle.[13]

[11] 10 CFR 40.31(f), 40.32(e), 10 CFR 7.21(f), 70.23(h), 36 F.R. 12731, July 7, 1971.

[12] An exemption for unrefined and unprocessed ore is based on the Commission's findings that there is no need to license it from the standpoint of either public health and safety or the national security. See 10 CFR 40.4(h), 40.13(a)(b).

[13] As the so-called Mapleton intervenors put it:

> In general, Mapleton believes that all adverse environmental

The intervenors' suggested extension of the environmental study to uranium mining and tailings illustrates the extent of the remoteness and generality of what they contend must be analyzed in this proceeding, its lack of any specific relation to the project before us, and its departure from what we believe to be required by the Environmental Policy Act. The health aspects of uranium mining and the problem of tailings have been the subject of extensive consideration by Congress and by other public authorities.[14] We recognize of course that an agency's duty to conduct an environmental study is not limited by its statutory authority,[15] but the universality of what the intervenors claim and its remoteness from an environmental study of the specific project before us—the licensing of these two reactors—is perfectly plain.

The intervenors even seek to extend the environmental study in this proceeding to such subjects as the production of uranium by means not presently developed, such as the liquid metal fast breeder reactor.[16] The development of this

effects and social and economic costs associated with the nuclear fuel cycle, to wit, mining, milling, feed material preparation, fuel enrichment, fuel fabrication, reactor operation, transportation, fuel reprocessing, and ultimate high-level radioactive waste storage and disposal should be considered in this proceeding.

Counsel for the intervenor Environmental Defense Fund and for the intervenors Saginaw Valley Nuclear Study Group and others explicitly concur in such an all-embracing view of the study to be undertaken.

[14] See Hearings, Use of Uranium Materials for Construction Purposes, October 28-29, 1971, and Summary Analysis of Hearings, 39-44, 12-13; see also P.L. 92-314, Title II, approved June 16, 1972; H. Rept. No. 92-1066, 92d Cong., 2d Sess., 7-8, 47-49.

[15] See *Natural Resources Defense Council* v. *Morton*, 458 F. 2d 827, 834-5 (D.C. Cir. 1972).

[16] The Saginaw Valley intervenors argue: "Since the proposed plant may rely upon nuclear fuel created by a Breeder, the risks

type of reactor is in its early stages, and is a matter of national policy [17] which has no specific relationship to the subject matter of this proceeding. The Commission has already published an environmental study of a demonstration fast breeder project.[18] Undertaking to weigh here its probable environmental consequences by the standards of the Environmental Policy Act and under the procedures of Appendix D would be an exercise in futility which would be duplicitous, premature and far beyond the reasonable scope of the present case. That would be even more true of such a study of other means under development.

We are deeply conscious that, in enacting the Environmental Policy Act, Congress intended that the phrase "to the fullest extent possible" in Section 102 should not be understood as authorizing the avoidance of the duties imposed by that Section, and that Congress intended that an agency comply with the directives in Section 102 unless existing law makes full compliance impossible. (See Conference Report, H.Rept. 91-765, 9-10). But, as we pointed out in the *Vermont Yankee* case, our duties under the Environmental Policy Act are defined by the proposed "project" or "action" before the agency. We cannot accept that it was the purpose of Congress, in adopting the Environmental Policy Act, to impose such a remote, conjectural and multiplicitous requirement on this proceeding as the intervenors assert, and as an inference to do so in every reactor licensing proceeding.

and costs of the development and operation of Breeders must be analyzed against any alleged or asserted benefits, if any, that may be gained by construction and operation of the proposed Plant."

[17] See Message from the President of the United States Transmitting a Program to Insure an Adequate Supply of Clean Energy in the Future, June 4, 1971, 92d Cong., 1st Sess., H. Doc. No. 92-118.

[18] Environmental Statement, Liquid Metal Fast Breeder Reactor Demonstration Plant (April 1972, Report No. WASH-1509).

There is no way of ascertaining in the present proceeding what plants in the various earlier stages of the fuel cycle will be engaged in one stage or another of the production of fuel for this plant among others. There is no way in which one can now even tentatively identify, over the prospective life of the proposed installation spanning perhaps four decades, the specific mines, mills, refining and conversion plants, and fabrication facilities which will from time to time be involved in furnishing the fuel for these reactors.

In any case, we cannot believe that Congress intended that in the proceedings for the licensing of each individual power reactor there be conducted an environmental study of the present and future operations of an entire industry, including complex and perhaps unidentifiable operations performed by unidentifiable persons at unidentifiable locations under unidentifiable conditions. To embark on such a venture would plunge us into a labyrinth of indeterminacy. What we regarded in *Vermont Yankee* as impossible would here be ernormously compounded.

We held in the *Vermont Yankee* case that, under the principles enunciated by the Court of Appeals for the District of Columbia in *Natural Resources Defense Council* v. *Morton,* 458 F. 2d 827 (1972), the Environmental Policy Act is to be construed in the light of reason, and that the environmental study required by that Act for an individual power reactor does not extend to reprocessing and the ultimate disposal of wastes. We now conclude that, for the reasons expressed in the *Vermont Yankee* case and in this memorandum, the order of the Licensing Board dated March 10, 1972 should be affirmed.

It is therefore ORDERED:

1. Certification to the Commission of the order of the Atomic Safety and Licensing Board dated March 10, 1972 is denied;

2. The order of the Atomic Safety and Licensing Board dated March 10, 1972 is affirmed.

ATOMIC SAFETY AND LICENSING
APPEAL BOARD

WILLIAM L. WOODARD
Executive Secretary

Dated: July 19, 1972

LBP-72-34

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

Docket Nos. 50-329, 50-330

In the Matter of

CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

HEADNOTE

The Atomic Safety and Licensing Board authorized issuance of a construction permit to Consumers Power Company for the construction of a dual purpose pressurized water nuclear power plant. The plant, consisting of two units will produce about 1300 megawatts of elctricity and also 4,050,000 pounds of process steam for sale to Dow Chemical Company's Midland plant, located on adjacent land. The permit is issued subject to any changes in the criteria for emergency core cooling systems and to undertakings by the Applicant to conduct a number of ecological studies and develop surveillance programs including a study of the intensity and extent of fogging and icing from the cooling pond.

APPEARANCES

RICHARD G. SMITH, Esq., JOHN K. RESTRICK, Esq.,
ROBERT LOWENSTEIN, Esq., and HAROLD REIS, Esq.
on behalf of Consumers Power Company, *Applicant*

MILTON R. WESSELL, Esq. and JAMES N. O'CONNOR, Esq.
on behalf of Dow Chemical Company, *Intervenor*

MYRON M. CHERRY, Esq.

on behalf of
Saginaw Valley Nuclear Study Group, Citizens
Committee for Environmental Protection of Michigan,
Sierra Club, United Automobile Workers of America,
West Michigan Environmental Action Council, and
University of Michigan Environmental Law Society,
Intervenors

WILLIAM J. GINSTER, Esq. and IRVING LIKE, Esq.
on behalf of Residents of Mapleton, *Intervenors*

JAMES A. KENDALL, Esq.
on behalf of Midland Nuclear Power Committee, *Intervenor*

WILLIAM H. WARD, Esq.
on behalf of State of Kansas

CURTIS G. BECK, Esq.
on behalf of the State of Michigan

THOMAS F. ENGELHARDT, Esq. and DAVID E. KARTALIA, Esq.
on behalf of the Regulatory Staff of the
Atomic Energy Commission

Initial Decision

I. BACKGROUND

1. On January 13, 1969, Consumers Power Company ("Applicant") filed with the Atomic Energy Commission ("AEC") an application for a license to construct and operate a dual purpose pressurized water nuclear power plant.[1] The proposed plant, designated the Midland Nuclear Plant, Units 1 and 2 ("Plant"), would produce approximately 1300 megawatts of electricity and 4,050,000 pounds of process steam for sale by Applicant to the Dow Chemical Company. It would be located on Applicant's approximately

[1] The Application and its 21 amendments are collectively referred to as the "application" or the "PSAR".

1200-acre site on the south shore of the Tittabawassee River in Midland County, Michigan.

2. Upon completion of the Staff review,[2] the AEC, on October 29, 1970 (35 *F.R.* 16749) published a Notice of Hearing pursuant to which a pre-hearing conference was to be held on November 17, 1970, and the hearing was to begin on December 1, 1970. On or before November 17, 1970, as required by the Notice of Hearing, petitions to intervene were filed by the Dow Chemical Company (Dow) and the Midland Nuclear Power Committee[3] in support of the application. Against the application, a joint petition to intervene was filed by the Saginaw Valley Nuclear Study Group, Citizens Committee for Environmental Protection of Michigan, Sierra Club, United Auto Workers of America, Trout Unlimited, West Michigan Environmental Action Council and University of Michigan Environmental Law Society (hereinafter collectively called "Saginaw Intervenors") and a separate petition by the Environmental Defense Fund (EDF).[4] These petitions were granted by the Board in its Order dated November 24, 1970. A late petition to intervene against the application filed by six residents of the community of Mapleton ("Mapleton Intervenors") was granted by the Board's Order of December 8, 1970.

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[2] Prior to completion of the Staff review, the application was reviewed by the Advisory Committee on Reactor Safeguards (ACRS), the ACRS Reports, dated June 18, 1970 and September 23, 1970 were admitted into the record (Applicant's Ex 4 and Ex 5) as required by law (42 U.S.C. § 2232(b)) for the sole purpose of showing compliance with the statute and not as evidence of the truth of any statement therein.

[3] The Midland Nuclear Power Committee did not actively participate in the hearing.

[4] Trout Unlimited and Environmental Defense Fund withdrew from the proceeding before the hearing on environmental matters. (Tr. 5685-86)

3. On December 1, 1970 the Hearing was begun for the purpose of receiving limited appearances. Limited appearances in favor of the application were made by the following individuals and organizations: Harold Krefft for Federal Power Commission; William G. Turney for Michigan Water Resources Commission; Donald E. VanFarowe for Michigan State Air Pollution Control Commission; James Woodruff for Michigan Public Service Commission; John A. Rapanos; Franklin E. Braman for Board of Directors of Downtown Bay City, Inc.; Hon. Julius Blasy, Mayor, City of Midland; Frank Olds, Chairman, Board of Commissioners, Midland County; Robert B. Chatterton, Supervisor Midland Township, Midland County; Dr. Sidney Smock for Midland Hospital Association; Fred L. Yockey, City Manager, City of Midland; Dr. Edward L. Kern, President, High Performance Technology, Inc.; Clifford Mapes, Vice Chairman, Midland County Road Commission; Ned Arbury, President, Arbury & Sons Insurance; Milton Getzendaner, President, Midland Nature Club; H. C. Allison, Vice President, Alden B. Dow Associates, Inc.; Fred Minzer for Minzer Realty; J. R. Buckely, Vice President, Mutual Savings and Loan Association; Roy Lanham, President, Brown Lumber, Inc.; John A. Miller; Alan Ott, Vice President and Director, Chemical Bank and Trust Company; Rev. Theodore M. Greenhoe for Memorial Presbyterian Church; Robert Ferries, President, Ferries and Maxwell Insurance Agency, Inc.; James G. Bandeen, President, Bandeen Chevrolet; Arthur E. Maass, Superintendent, Wastewater Department, City of Midland; Lyn DeVries for Midland Business and Professional Womens Club; Robert Parker, Executive Vice President, Midland Area Chamber of Commerce; William H. Meier, President, Meier Studio and Camera Shop; Robert Kingsley, Director of Elementary Education, Midland Public Schools; George B. Ulmer; Robert Copeland, Chairman, Midland Section, American Institute of Chemical Engineers; Lewis Warren, Executive Vice President, Greater Saginaw Chamber of

Commerce; William Demers, President, Lumber Dealers Association; Robert R. Denison, Airport Manager, Tri-City Airport Commission; Bruce R. Benway, Vice President, First National Bank; Larry Reed, Executive Vice President, Bay Area Chamber of Commerce; George Elleson, Bay County Industrial Development Corp.; and James L. Collison, Executive Director, East Central Michigan Economic Development District. Limited appearances opposing issuance of the construction permit were made by Georgena Goff and Wendell Marshall. Limited appearances expressing interest in procedural or safety matters related to the Plant but not opposing issuance of a construction permit were made by Thomas Doyle for Michigan Department of Natural Resources; Judith Boli for Sagniaw YWCA; William Foster; and Frederick L. Brown, President, Michigan United Conservation Clubs.

4. After the limited appearances, the hearing was adjourned to permit opposing intervenors to have discovery and prepare for the hearing. Among the contentions of opposing intervenors were several relating to "environmental" (as opposed to radiological health and safety) matters. Under the controlling regulations of the AEC, environmental issues could not be raised in the proceeding. On April 27, 1971, the Board held Intervenors' challenge to those regulations insufficient, thereby excluding all environmental questions from the proceeding.[5]

5. The hearing on radiological health and safety questions resumed on June 21, 1971, and continued on seventeen days until July 23, 1971, when it was adjourned.[6] Coin-

[5] Except as to the conformance of the Environmental Impact Statement with the Regulations, an issue which later developments made academic.

[6] At that time the hearing on radiological matters was substantially completed, except as to the question of the emergency core cooling system (ECCS). By Order dated March 10, 1972, the record

cidentally, on the same day the United States Court of Appeals for the District of Columbia (in *Calvert Cliffs Coordinating Committee* v. *AEC*, 449 F. 2d 1109 (1971)) held that the AEC regulations did not comply with the National Environmental Policy Act. (42 U.S.C. §§ 4321-49 (1970)). One effect of the *Calvert Cliffs* decision was to require that environmental matters be heard in pending proceedings, including this proceeding.

6. Following the adoption of new regulations, the AEC published, on December 4, 1971, a Supplemental Notice of Hearing on environmental matters. A timely petition for intervention on environmental issues by Steve J. Gadler was denied by the Board on February 9, 1972.[7] (By Order of March 31, 1972, the Atomic Safety and Licensing Appeal Board sustained the denial.)

7. On October 19, 1971, pursuant to the revised Regulations, Applicant duly filed its Supplemental Environmental Report (ASER).[8] This was followed by preparation of the Staff Draft Environmental Statement and the circulation of that statement for comment as required by law. The Final Environmental Statement (FES) was then prepared and notice of its availability was published on April 7, 1972 (37 CFR 7012).

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was closed on radiological questions except ECCS and the iodine spray removal system.

[7] On September 13, 1971, the State of Kansas petitioned to intervene to challenge the AEC decision to locate an ultimate high-level waste depository in Kansas. The Board permitted the intervention for the limited purpose of arguing the legal question whether high-level waste storage was an issue in this proceding. By Order dated March 10, 1972, the Board ruled that high-level waste storage was not an issue in the proceeding, but referred its decision to the Appeal Board. The latter agreed. Kansas has not otherwise participated in the proceeding.

[8] Applicants' original Environmental Report (AER) was filed on July 24, 1970 under then controlling regulations.

8. Evidentiary hearings on environmental matters began on May 17, 1972, and ended on June 15, 1972, after fourteen days of hearings.

9. This proceeding is a contested proceeding within the meaning of the regulations. It should be pointed out, however, that Saginaw Intervenors who took the laboring oath in the radiological hearing did not participate in the environmental hearing and have not filed proper proposed findings [9] or conclusions even on radiological matters, although directed to do so by the Board's Order of June 28, 1972. Mapleton Intervenors' participation in the radiological hearing was relatively limited but they fully participated in the environmental hearing. Unfortunately, their proposed findings fall far short of the specification and detail required by the Regulations, and do not serve the purpose for which they were required.[10] As Applicant has noted both Mapleton and Saginaw are in default; as Applicant has also conceded, it is not clear what should be done about the default. The Board might, we suppose, strike the intervention and treat the proceeding as uncontested. This would not make sense in the circumstances. The opposing Intervenors by their participation strongly influenced the conduct of the proceeding and their work should not be ignored. On the other hand, we are troubled by the notion of opposing Intervenors that they can avoid the burden

[9] Saginaw did file a paper entitled "Proposed Findings of Fact and Conclusions of Law" but as to environmental issues they expressly state that "they have no conventional findings of fact to set forth." As to radiological issues, they state that they "have not chosen to search the record and respond to this proceeding by submitting citations of matters which we believe were proved or disproved." They do claim to reserve the right to take exception to any findings which the Board makes.

[10] The Board would like to note that the failure to propose proper findings and conclusions has greatly complicated the task of the Board and has made it virtually impossible in some instances to know whether particular issues are in fact contested.

of proposed findings and at the same time reserve the right to attack the Board's decision once made. We have concluded that the best course would be the following: We will treat as contested issues of fact those as to which intervenors introduced affirmative evidence or engaged in substantial cross examination. With respect to conclusions of law, we will attempt to deal with those questions which we understand to be raised by the proposed conclusions in the light of earlier contentions by the intervenors. We leave open the question of the effect of the failure to file adequate Proposed Findings and Conclusions for consideration when and if there are exceptions to our decision.

II. Radiological Health and Safety

10. The proposed reactors are of the pressurized water type, each with an ultimate power level of 2252 MWT. One of the reactors will be used solely for the production of electrical power (800 MWe); the other will produce approximately 500 MWe of electrical power and, in addition, supply steam for use in various manufacturing processes.

11. Applicant's proposed findings on radiological issues cover approximately 100 pages (out of a total of 267). While the Board has found these very detailed proposals helpful, it does not feel that it should respond in kind. The proposed reactors are substantially identical to a number of reactors previously licensed. The Board has reviewed the various aspects of the proposal, *e.g.*, coolant systems, leak detection systems, seismic design criteria, instrumentation, radiation monitoring, control room, flooding,[11] and finds that Applicant has submitted sufficient information and the Staff has conducted an adequate review

[11] With respect to flooding, the staff testified that it would review the Applicant's calculation of the probable maximum flooding during construction of the plant to assure that the calculational technique described by Applicant have been properly employed. (Staff Safety Evaluation ("SSE") p. 14)

of those aspects of the Plant. We do not believe it would be helpful, nor is it required that we do so, to comment in any detail on the standard features of the Plant, (except where an issue is contested). Instead we will devote our attention to those aspects of the proposal which are new or unusual, to contested issues, and to those specific matters as to which we are required to make findings.

12. The aspects of the Plant of primary interest stem from the fact that its dual-purpose nature requires that the reactor be located in close proximity to a large chemical plant, a plant which is heavily populated during work hours. The contested radiological issues are: meteorology and the related dose calculations; quality assurance; emergency procedures; and iodine spray removal systems.

13. The Plant site is located on the south shore of the Tittabawassee River in Midland County,[12] Michigan. The site consists of approximately 1200 acres of which a relatively few acres along the river will be utilized for Plant buildings and about 880 acres to the south of the area occupied by the Plant itself will be used for a cooling pond. The site is bounded on the north and east by the Tittabawassee River, on the south by Gordonville Road and on the west by farmland and scattered residences (PSAR Applicant's Ex. 1-A, § 2 and Figure 2-1).

14. Applicant has described the population density and use characteristics in the site environs (PSAR Applicant's Ex. 1-A, § 2.2.5 and 2.2.6). The areas directly across the river from the Plant to the north and east are occupied primarily by the industrial complexes of the Dow and the Dow Corning Company for a radius of one mile to one and one-half miles. The area beyond these industrial complexes to the north is occupied by the commercial and residential

[12] The site is presently in Midland Township; however an Order of annexation of the Township to the City of Midland has been issued and is presently in litigation.

areas of the City of Midland and the area to the east is a sparsely populated residential area containing many forested areas and scattered farms. The area to the south of the Plant is occupied by the cooling pond and other portions of the site for about one mile, is primarily forested for an additional two miles and primarily used for farming for another two miles. The first mile to the east of the Plant is industrial property owned by Applicant and Dow; the next mile is mostly residential and light farming; and the next three miles are sparsely populated and primarily agricultural. The area five to fifty miles from the site is primarily used for farming, where not forested, except for the industrial communities of Bay City, Saginaw and Flint (PSAR Applicant's Ex. 1-A, § 2.2.6). Projections of population growth have been made by Applicant for Midland County and surrounding counties based on material supplied by the Michigan Department of Commerce (PSAR Applicant's Ex. 1-A, § 2.2.5).

15. The required (10 CFR § 100.3(a)) exclusion area for the Plant has a radius of 0.31 miles (500 meters). The land within this area will be owned by Applicant except for a small portion which consists of a fenced-in waste treatment facility owned by Dow. Dow employees visit this facility only occasionally and Dow has agreed that Applicant may exercise the right to remove persons therefrom when required (PSAR Applicant's Ex. 1-A, § 2.2.4; Response to Staff Question 2.8, PSAR Applicant's Ex. 1-C, p. 2.8-1). The Board concludes that Applicant has the authority to "determine all activities" in the calculated exclusion area as required by 10 CFR Part 100.

16. The low population zone proposed by Applicant has a radius of approximately one mile (1600 meters) from the reactors. The area encompasses property owned and controlled by Applicant south of the reactors, a part of the Dow and Dow-Corning Company complexes to the north and east and a few residences in the southwest (PSAR

Applicant's Ex. 1-A § 2.2.5.5). The residential population within this zone is approximately 38 and the transient industrial or business population, primarily employees of Dow and Dow-Corning, is about 2145 (PSAR Applicant's Ex. 1-a, § 2.24; Tr. 3103, 3119, 3295). The residential population within the zone is well within acceptable limits. The size of the transient population is unusually large and the acceptability of the low population zone depends upon the ability to evacuate the Dow and Dow-Corning employees. Subject to what is said below (see Findings 31-33) with respect to evacuation plans, the Board finds the population zone satisfactory.

17. The distance from the reactor to the nearest boundary of the City of Midland is 0.21 miles, considerably less than the "population center distance" of one and one-third miles seemingly required by the Regulations (10 CFR § 100.11(a)(3)). However, in view of the fact that the population within one and one-third miles was largely limited to a transient population and that populous areas of Midland were sufficiently removed from the site vicinity, the Staff concluded that the reduced population distance was acceptable (SSE, p. 9; Tr. 2135-39, 2145, 2165). We concur.[13] The recently ordered annexation of Midland Township by the City of Midland will not affect the population distribution.

18. Applicant is a combination electric and natural gas utility incorporation under the laws of the State of Michigan. The Applicant will finance the total costs of constructing the Midland Plant as an integral part of its normal construction program, using funds internally generated (cash on hand, undistributed earnings and depreciation and other accruals) and from the sale of securities (debt, equity,

[13] Again, the acceptability of the reduced population distance depends on our conclusions as to the feasibility of rapid evacuation of the transient population, discussed at Findings 31-33 below.

and short-term notes) when and as required, in the same general manner as it finances other Plant additions. (PSAR Applicant's Ex. 1-D and 38E; SSE Appendix H, and Staff Ex. 8.)

19. Applicant has had long experience in building and operating fossil fuel plants and has gained experience in nuclear plants at its Big Rock Nuclear Plant and Palisades Plant. The Babcock and Wilcox Company (B&W) which will design and supply the nuclear steam supply system, and the Bechtel Corporation which will design and supply the remainder of the Plant, have had extensive experience in designing and constructing nuclear projects.

20. The application reflects that the activities to be conducted would be within the jurisdiction of the United States and that all of the directors and principal officers of the Applicant's organization are citizens of the United States. Applicant is not owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. The Applicant will rely upon obtaining fuel as it is needed from sources of supply available for civilian purposes, so that no diversion of special nuclear material needed for military purposes is involved (PSAR Applicant's Ex. 1-D; SSE p. 83, following Tr. 1674).

21. The AEC requires that data as to site meteorology be included in the PSAR for a construction permit. This information is used in evaluating the adequacy of plant site and plant design. The meteorological data are used in calculating the radiation dose which might be received over any given period of time by a person at the site boundary from normal operating or accidental airborne releases. Intervenors questioned the adequacy of the meteorological data with respect to the evaluation of the site under 10 CFR Part 100. In particular, they challenged the assumption as to diffusion rates used in that evaluation.

22. Two main sources of data were used by Applicant: The Dow Plant, which has recorded weather records for over ten years, and the Saginaw (Tri-City) Airport, about eight miles southeast of the site.[14] The Dow data was considered to be too incomplete for purposes of calculating diffusion models, and for that purpose Applicant used the more extensive, but more remote data from Tri-City Airport. (PSAR, Applicant's Ex. 1-A, p. 2A-4). In order to grant a construction permit, the Board is not required to find that the available meteorological data is complete (which it clearly is not). The Staff did not accept Applicant's data, but used, as is its practice, an arbitrary formula incorporating what it claims to be many conservative features. (SSE, p. 10). The Staff witness, an employee of the National Oceanographic and Atmospheric Administration ("NOAA") confirmed the conservatism of the assumptions in light of the general conditions in the area. (Tr. 3704). The testimony of Intervenor's witnesses, although there is some ambivalence, taken as a whole tends to corroborate the conservatism.[15] (Tr. 3406-3687). The Board is satisfied that the assumptions are sufficiently conservative to justify a reasonable expectation that the site is satisfactory.

23. Because of the absence of on-site data, the Applicant indicated it will conduct an on-site meteorology program with a continuous recording of meteorological data (wind direction, velocity and temperature lapse rate) until at least a year's history is obtained. (PSAR, Applicant's Ex. 1-c p. 1.00-1). Since the conclusion of the hearing, the AEC has promulgated Safety Guide No. 23, *Onsite Meteorology Programs*, describing the requirements of an acceptable on-site meteorological program, which is considerably

[14] A third source of some upper air data was U.S. Weather Bureau information from Flint, Michigan, about 50 miles southeast of Midland. (PSAR, Applicant's Ex. 1-A, pp. 2A-3 to 2A-4).

[15] For example, (at Tr. 3659) Dr. Epstein characterized the site as "being rather good from the point of diffusion by and large".

more extensive than that proposed by Applicant in the PSAR. The Board concludes that the Staff should require Applicant to conduct a meteorological program of the scope described in the Safety Guide No. 23. The program must be sufficient to validate the conservatism of the meteorological assumptions referred to above and can be developed and executed during the construction phase.

24. The application states that the reactor vessel, steam generator, and pressurizer will be designed, manufactured and tested in accordance with Section III of the ASME Code. (PSAR, Applicant's Ex. 1-A, § 4.5). Several types of nondestructive tests are to be performed during fabrication of the reactor vessel. These tests include radiography of welds, ultrasonic testing, magnetic particle examination, and dye penetrant testing. (PSAR, Applicant's Ex. 1-A, §§ 4.5.1 and 4.5.2). Surveillance specimens consisting of material representative of the reactor vessels are to be exposed in the reactor vessels to allow monitoring of the neutron induced nil ductility transition temperature shift. (PSAR, Applicant's Ex. 1-A, § 4.2.5.2).

25. The reactor coolant piping is to conform to the nuclear power piping code, USASI B31.7, and the reactor coolant pump castings are to be manufactured in accordance with Section III of the ASME Code, where applicable. (PSAR, Applicant's Ex. 1-A, § 4.5). All system components are to be designed to withstand normal loads of mechanical, hydraulic and thermal origin plus the forces that would result from the blowdown of the reactor coolant system as a result of a design basis loss-of-coolant accident, concurrent with the design basis earthquake loads. (PSAR, Applicant's Ex. 1-A, Appendix 5A). The proposed codes and standards for reactor coolant system components and piping comply with 10 CFR § 50.55a. The Staff has reviewed the codes, the plans for design and fabrication, and the quality specified for the reactor vessels and coolant piping

and concluded that the reactor vessels and coolant piping as planned are acceptable. (SSE, p. 20).

26. Finally, the quality assurance program calls for verification by the Applicant of the methods used by the vendor to certify that this equipment meets the specifications developed on the above bases. (SSE, p. 22).

27. The Staff and their consultants have reviewed and found the seismic design methods acceptable. Major core and core support components will be designed to provide assurance that they are not vulnerable to vibration. Confirmatory vibration testing will be conducted as part of the preoperational start-up program. The Staff has found acceptable the Applicant's plans and methods for limiting the vibration of the internal components. (SSE, p. 22; SSE, Appendix G).

28. A great deal of the discussion with respect to Quality Assurance by the Intervenors reflected a basic misunderstanding of the Board's function in this area at the construction permit stage. That function is to ascertain whether the Applicant has adopted a *program* of quality assurance, over which it will have final responsibility, and which, if implemented in accordance with the representations of the application, will satisfy the requirements of Appendix B of 10 CFR Part 50. The enforcement of the program is the responsibility of the Commission which has delegated the enforcement function to the Director of Regulation. The Board must assume that the Director of Regulation, through the Directorate of Regulatory Operations will require adherence to the quality assurance programs described in the application.

29. The record in this proceeding shows that Applicant is committed to a comprehensive, documented quality assurance program for which it will have final responsibility. The application contains a description of the program, including a discussion of how the applicable requirements of Appendix B of 10 CFR Part 50 will be satisfied. The Board has reviewed this information and concluded that if the program is implemented in accordance with the representation in the application, the requirements of Appendix B will in fact be satisfied. During the hearing, much additional information relating to the question of quality assurance was introduced into the record (Tr. 4009 et seq.). For example, the record includes manuals implementing the quality assurance program; Division of Compliance (now Directorate of Regulatory Operations) reports, noting, *inter alia*, some deficiencies in the Applicant's implementation of the program; and documentation relating to what the Saginaw Intervenors allege was inadequate quality assurance during the construction of the Applicant's Palisades Plant. The Board has considered this additional information, but only for the limited purpose of determining whether any evidence has been adduced which would be inconsistent with findings favorable to the Applicant on the ultimate issues in the proceeding. The Board has found no such evidence in the record.

30. A major objection of Mapleton Intervenors is that fabrication of the reactor vessels for this plant had been commenced and one of the vessels was approximately 50% complete at the time of the radiological hearing, and that the AEC's Division of Compliance had not yet inspected the reactor vessel nor made audits of the fabricator's documentation. There is nothing in the Regulations or in sound practice which prohibits the beginning of fabrication of the pressure vessel before the construction permit is granted. Nor is there any requirement that the Division of Compliance inspect the vessel during fabrication. A witness from the Division of Compliance described generally the steps involved in reactor vessel fabrication, the documentation accompanying each step and the testing of the reactor vessel at the end of fabrication (Tr. 4539-41). At the end of this procedure the Division of Compliance will audit

the documentation and make a physical inspection of the vessels (Tr. 4541, 4568-69). Any deficiencies will be brought to the attention of Applicant and it will be required to correct them (Tr. 4569).

31. Applicant submitted an emergency plan prescribing immediate action to be taken to minimize exposure of persons to radiation, both within the exclusion area and outside the exclusion area from any major accidental release of radioactivity. The emergency plan prescribed the actions to be taken in order of priority, the responsibilities of Plant personnel and summarized the personnel and materials available for assistance. The emergency plan took into account evacuation of the Dow Chemical and Dow-Corning plants in the event of a large accident and gave consideration to procedures in the event of an accident at Dow Chemical that could affect the Plant. (PSAR, Applicant's Ex. 1-A, Appendix 2C-1 through 2C-20).

32. Testimony at the hearing indicated that Applicant had prepared the plan prior to issuance of the AEC's "Guide to the Preparation of Emergency Plans for Production and Utilization Facilities" in early 1970, and prior to promulgation of Appendix E to 10 CFR Part 50. (Tr. 2243). Despite its acceptability to the Staff, the Board found this original plan inadequate, and so advised Applicant at the hearing. (Tr. 2258, 2271). Applicant thereupon revised its emergency plan based on its Palisades Plant operating license stage emergency plan and on more detailed contact with local agencies. (Tr. 2604-2615). The revised plan contains and incorporates the State of Michigan emergency plan, the Midland County Civil Defense Plan and Dow Chemical evacuation procedures. Appendix E to 10 CFR Part 50 requires the Applicant to include in the PSAR a "discussion of preliminary plans for coping with emergencies." The discussion is to include "sufficient information to assure the compatibility of proposed emergency plans" with the plant location. The purpose of this

requirement as we understand it is not to insist on specific proposals, but to give enough general information to indicate that a satisfactory plan is feasible.

33. In view of the "credit" taken by the Applicant in establishing the population center distance and the relatively high number of transients in the low population zone, the Board was particularly interested in the evacuation procedures of Dow and Dow-Corning. Considerable testimony on the Dow procedures was adduced at the hearing. (Tr. 2664-2683; 3047-3266). Notwithstanding the testimony of Saginaw Intervenors' witness (Tr. 4695-4821), based on experience elsewhere in uncontrolled situations, the Board is satisfied that timely evacuation is reasonably assured. However, the Board agrees with the Staff's view that advance planning should be done to protect the population in the low population zone and that such plans should be capable of expansion and mobilization of extra resources should a more serious accident occur. The Board is satisfied that the revised plan conforms with the requirements of Appendix E to 10 CFR 50.

34. The reactor building spray system is provided to remove heat and fission products from the reactor building atmosphere following a loss-of-coolant accident in order to limit the reactor building pressure to the design value and to reduce the post-accident level of fission products in the reactor building atmosphere. Chemicals are added to the water coming from the borated water storage tank after a loss-of-coolant accident to establish a basic pH by addition of sodium hydroxide and to provide for iodine retention by addition of sodium thiosulfate. (PSAR, Applicant's Ex. 1-A, § 6.2). The major question raised was as to the long-term stability of the sodium thiosulfate. In the Board's view, Applicant's testimony at the hearing confirmed the long-term stability of sodium thiosulfate solutions (Tr. 2836-55).

35. Electric power generated by the Plant is to be fed through separate connections to a main transformer for each unit. There, it is stepped up to 345 kV and delivered to a switchyard on separate overhead lines. The units and associated switchyard will be part of the Applicant's integrated elctric system. The Plant elctrical output also feeds the Plant station power transformers. The five 345 kV transmission lines which terminate at the Midland switchyard will provide startup and standby power from the system through a step-down substation (to change the voltage from 345 kV) and a Plant start-up transformer. A second Plant start-up transformer will provide an alternate off-site power source via another 138 kV substation. (PSAR, Applicant's Ex. 1-B, §§ 8.2.1; p. 8.2-2; SSE, pp. 41-42). The Plant has an auxiliary power distribution system which is a two-bus system for each unit. The engineered safeguards system bus sections are electrically separate and redundant and will be located in separate rooms of the auxiliary building to provide physical isolation. The redundant safeguard bus sections will have access to (a) the Plant electrical output through the station power transformers, (b) the off-site area transmission network, and (c) the onsite emergency diesel generators. (PSAR, Applicant's Ex. 1-B, § 8.2.2, SSE, pp. 42-43). The Plant's direct current power supply for safeguards systems consists of two 125-volt batteries located in separate rooms. Two separate 125-volt d-c power distribution buses will be provided to supply redundant safety related loads in each unit. These batteries will have the capacity to provide a safe and orderly hot shutdown in the event that all a-c power is lost. Separate 250-volt batteries will supply non-safety related loads on site. (SSE, p. 44-45).

36. The Saginaw Intervenors questioned whether there was sufficient redundancy and electrical independence in order to assure that electrical power would always be available to operate required safeguards equipment. Applicant's

testimony was that the design criteria for the two-unit Plant are satisfied by the two shared diesel generators and that their ability to perform their safety functions is not significantly impaired by such sharing. (Tr. 2330-2340).

37. The Board asked Applicant to indicate the experience of other industries with emergency generation and their redundancy requirements. (Tr. 2920-21). Applicant testified that no industry, except the nuclear industry, requires redundant emergency power sources although some airports have redundant systems. The absence of such a requirement appears to be based on the satisfactory performance of emergency power systems over the past twenty years. (Testimony of Witness Castleberry, filed August 16, 1971.)

38. The Staff has found the electrical system, including the backup diesel system adequate; however the Staff has required that test data be supplied to confirm the suitability of the diesel generators as an on-site emergency power source prior to the operating license review (SSE, p. 43).[18] We concur.

III. Emergency Core Cooling System (ECCS)

39. The sufficiency of the ECCS was contested by Intervenors from the outset of the proceedings and would, in the normal course of events, have been one of the radiological issues litigated in June and July 1971. On June 29, 1971, the AEC issued new rules governing ECCS in the form of "Interim Criteria for Emergency Core Cooling Systems for Light-Water Power Reactors" (36 *F.R.* 12247); the Criteria were amended on December 18, 1971 (36 *F.R.* 24082) to cover B & W reactors. In the meantime the AEC had on November 30, 1971 (36 *F.R.* 27774) pub-

[18] The Staff has also indicated that more detailed cable installation and additional design criteria will be required (SSE, p. 45).

lished a Notice of Rule Making Hearing on ECCS.[17] Both Mapleton and Saginaw Intervenors are parties to that hearing.

40. Intervenors do not contest the compliance of the proposed reactor with the Interim Criteria. The Staff has found that the proposed reactors do meet the criteria and the Board finds the Staff review adequate.

41. Intervenors do, however, challenge the validity of the criteria. Normally such a challenge would be made (under the Calvert Cliffs doctrine) by attempting to establish a sufficient case of invalidity to warrant the Board's referral to the Commission. Here, as the Board has pointed out in its Order of March 10, 1972, the usual practice would make no sense. The AEC has the issue before it; it is being vigorously litigated in the national ECCS hearing (Docket No. RM-50-1) and nothing but confusion would be added by our consideration of the issue here.[18]

42. We believe that this mode of proceeding is mandated by the AEC instruction that the pendency of the rule-making hearing should not affect the orderly resolution of the ECCS issue in licensing proceedings (37 *F.R.* 288). We also are of the view that no problems of public health and safety are created by so proceeding. Applicant will be bound to comply with any changes in criteria which may be adopted as a result of the national hearing. In any event, Applicant has committed itself to meeting any applicable ECCS regulation forthcoming from the proceeding and has furnished the Board with a compilation of dates by which major components involved in ECCS analysis are

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[17] The Interim Acceptance Criteria were promulgated without a rule-making hearing.

[18] Our conclusion is consistent with that of the Atomic Safety and Licensing Appeal Board in *Wisconsin Electric Power Company et al.* (Point Beach Nuclear Plant, Unit 2), ALAB-78 (November 10, 1972), at pp. 517-539 in WASH-1218(Suppl. 1).

needed at the site in order to meet a schedule of commercial operation in May 1977 (Applicant's letter of June 6, 1972). This schedule indicates that no major components involved in the ECCS analysis are needed at the site prior to the spring of 1974. Applicant in furnishing the list also agreed that unless the ECCS rulemaking had been completed earlier, none of those major components would be shipped prior to the date needed on site without prior AEC approval (Applicant's letter of June 6, 1972). Thus, if any modification in equipment is necessary, the equipment will still be in the shop where it can be more readily modified than if it had been shipped or installed.

IV. Environmental Issues

43. With respect to environmental questions the Board is required to do the following: (a) determine whether the requirements of the National Environmental Policy Act and Appendix D to Part 50 have been complied with, (b) independently consider the final balance among conflicting environmental factors in the record of the proceeding, (c) determine after weighing the environmental, economic, technical and other benefits against environmental costs whether the permit should be issued, denied, or appropriately conditioned, (d) (in a contested proceeding) decide any matters in controversy among the parties. By its Order to March 10, 1972, the Board ruled that it would not consider the environmental effects of the fuel cycle except in the following aspects: (1) the transportation of fuel elements from the fuel fabrication plant to the reactor site, (2) the transportation of spent fuel elements from the site to the fuel reprocessing plant, (3) the transportation of packaged radioactive material from the site to low-level waste burial grounds, and (4) radioactive discharges occurring at the site and any other environmental effects directly associated with the handling and use of the nuclear fuel at the site. That decision of the Board was upheld by the

Atomic Safety and Licensing Appeal Board. In reaching our decision we do not mean to suggest that there are no environmental costs associated with mining, fabrication and waste disposal. But we are not engaged here with an assessment of the entire atomic energy program and there is no meaningful way—except the cost of fuel—that we can assess those costs in this proceeding.

44. Environmental issues are a new area of responsibility for the Atomic Safety and Licensing Boards; as yet there are no precedents to guide the Boards and the regulations are vague as to how the environmental decision is to be made. In the hope that it will be helpful to Boards in other cases, we have attempted to describe in some detail how we have gone about deciding environmental issues. In the process we have treated some issues in more detail than is warranted by the evidence adduced in the hearing.

45. The difficulty lies in the direction to the Boards to independently consider the final balance after weighing the costs and benefits. "Final balance" and "weighing" costs against benefits have a deceptively mechanistic connotation, as though one could make a calculation of the costs and benefits and decide on the basis of the arithmetic. Obviously this is not possible. Calculations of costs and benefits may be a useful exercise, but more often than not the qualifications are so speculative and non-objective as to be worse than useless.

46. The chief benefits claimed by Applicant and the Staff are the production of electricity (and process steam) and the elimination of the air pollution from Dow's present fossil-fuel steam plant. The claim of production of electricity as a benefit is in turn premised on the need for additional electricity on Applicant's system. The demonstration of that need took the conventional format.

47. Applicant presented detailed electric sales forecasts through 1980, converted sales forecasts into estimates

of peak demand for electricity and related the projections to its existing generating capacity, its construction and retirement program and projections for the Michigan Electric Power Pool to demonstrate the need for electricity from the Plant. (ASER Applicant's Ex. 38F-1, Section 2; Applicant's Ex. 38G, revised Ex. 1 to Section 2; Applicant's Ex. 38K, pp. 108-114.) The projected increases in sales over the next ten years result from population increases, particularly large increases in the adult population which result in increased household formation, and increased usage per consuming unit, including significant increase in electricity being used for control or elimination of air and water pollution (ASER Applicant's Ex. 38F-1, pp. 2-6 to 2-9; Tr. 6528-33). The Staff has concluded that the projections of need are reasonable, and a witness from the Federal Power Commission (FPC) agreed (Tr. 8090-91). Intervenors do not seriously challenge the projections, although Mapleton made a weak try at eliciting a concession that the additional capacity was really to satisfy Canada's needs rather than local needs. We find that this "contention" is without foundation, and we conclude that Applicant's projections of need are reasonable. (ASER Applicant's Ex. 38G, Table DEM-1 to revised Ex. 1 to Section 2; Applicant's Ex. 38K, pp. 109, 111.)

48. Intervenors have suggested at various times that the Board must go behind the characterization of "demand" made by the Applicant to determine whether an appropriate alternative to satisfying the demand would be to set limits on particular uses of electricity. The Board declines to do so. So far as appears from the record, the postulated demand is made up of normal industrial and residential use and it is, in our view, beyond our province to inquire into whether the customary uses being made of electricity in our society are "proper" or "improper". The suggestion was also made that Applicant is stimulating demand by its advertising. No evidence was offered on this

point and absent some evidence that Applicant is creating abnormal demand, the Board did not consider the question.

49. Once the Board accepts the need and the "benefit" of satisfying that need, its conclusions on the cost benefit questions (although not as to alternatives) is, in our view, practically a foregone conclusion. It would require some evidence of special environmental damage to outweigh the benefit and there is no suggestion of such special damage in the record. Indeed if such evidence existed, it would probably be relevant to the question of alternatives rather than cost-benefit.

50. Nevertheless, we believe it would be instructive to review in some detail the subject of the cost of the damage to terrestrial ecology at the site. The evidence on this point was a substantial portion of Mapleton Intervenors affirmative case and the subject illustrates very well the nature of some of the problems posed for all concerned by the requirement that the costs and benefits be weighed and a balance struck.

51. As noted earlier, the site is adjacent to a large industrial complex and some residential property. There is nothing unique about it,[19] and in all likelihood, if not used for the proposed plant, it will be used for some other industrial, or possibly residential, development. Applicant's assessment of the impact of the plant on the terrestrial ecology is based on a survey performed by a team under the general supervision of Dr. Leslie Gysel of Michigan State University.[20] (ASER, following p. 3-1.) Applicant

[19] The Board visited the site and saw nothing to contradict Applicant's evidence as to the absence of unique characteristics

[20] After the close of the hearing, Applicant offered a written statement of Dr. Gysel in reply to the testimony of Mapleton's witness Dr. Stuart Holcomb. Mapleton objected to the reception of Dr. Gysel's statement, and, asked that if it were to be received in evidence, the Board also consider a supplemental statement by Dr. Holcomb. Both statements are essentially argumentative and no purpose would be served by re-opening the hearing to allow cross-examination. The Board understands the arguments of both sides, and for reasons which should be clear from the text is of the view that no further evidence would be useful.

concededly did not attempt to identify every species of plant or animal at the site or to make detailed population estimates. Instead, it listed those wildlife species that had been personally observed at the site, those for which signs such as scat, tracks, etc. had been observed by local residents and plant site security personnel. The result of the survey is the conclusion that there are no special characteristics of the site of special value as a wildlife habitat.

52. Intervenors on the other hand challenge the survey as completely inadequate and assign a "conservative" value of $36,000,000 to the flora and fauna to be disturbed by construction. Approximately $30,000,000 of this amount is for losses of bird life and animal life alone. (Tr. 8563.) The method used to arrive at these evaluations was to estimate populations of species which would be expected to be found in the area on the basis of existing studies. Intervenors then estimated the number of each species expected to be found and assigned an arbitrary value to each bird and animal, for example, $10.00 per sparrow and $10.00 per mouse. Intervenors' witness, Dr. Stuart Holcomb, made no allowance for the effect of predation, although he conceded that predation would take a considerable toll. (Tr. 8592, 8596.) Nor did he make any allowance for the fact that many of the birds to be found are generally considered pests (indeed there are bounties in the State of Michigan on some of them). He then multiplied his final figure by 30 representing the expected life of the plant of 30 years. The Board finds this method of evaluation and calculation wholly insupportable. We note without further comment, for example, that the figures shown include $151,000 per year as the value of mice to be lost and

$190,000 per year for varieties of sparrows—a total of some $10,000,000 over the life of the plant for mice and sparrows alone.

53. The testimony does however illustrate that a more elaborate survey of ecological effects on the plant site could have been made. The real question is at what expense and to what end. We agree with Dr. Gysel that a complete survey would be very expensive and, for some species, not even possible. We are not insensitive to the problems posed, but we believe that it is only realistic to accept the cost of the land as the cost of the ecological impact on the site, at least absent a showing of some special characteristics as to particular species or value of the tract of land as a habitat for wildlife. But even if we were to accept Dr. Holcomb's premise, and his arithmetic, the result would be no different. Given our prevailing values there is no way in which the loss of flora and fauna in a site of this kind can outweigh the benefits of supplying needed electricity.

54. Are the other disbenefits claimed by Intervenors substantial in comparison to the need for electricity? Those stressed by Intervenors include the threat of process steam contamination; the impact on aquatic ecology; the effect of releases of radioactivity during normal operation; the claimed "synergistic" interaction of releases of radioactivity with chemicals released from Dow; the effect of accidents; fogging and icing from the cooling pond; and the effect of decommissioning.

55. To the extent that the claimed disbenefits are based on releases of radioactivity within the limits permitted by the regulations, these contentions of Intervenors were treated during the radiological hearings as attacks on the regulations. Under the prevailing practice, such attacks can only be considered by the Boards for the purpose of ascertaining whether a sufficient showing of invalidity has been made to warrant referral to the Commission. For those

purposes, the showing was, in all cases, clearly insufficient. However, in the environmental hearing, the Board permitted testimony and cross-examination on such matters as pertinent to the cost-benefit analysis.

56. As originally proposed, the process steam supplied to Dow would have been produced via secondary heat exchangers. At an early stage, Applicant modified the proposal to provide a tertiary heat exchanger—further insulating the process steam from the possibility of introduction of radiation from the primary coolant. The process steam will be monitored for radioactivity with an on-line gross gamma monitoring system and with grab samples for gross beta. The tertiary steam to Dow will not contain more radioactivity than the Lake Huron makeup water supplied to the tertiary heat exchangers. (PSAR Applicant's Ex. 1-c, p. 11.00-2.) If any Dow products exceeds the inherent natural background radioactivity, the product will be decontaminated or disposed of as necessary. (Applicant's Ex. 38c.)

57. The Board finds that the system promises to provide assurance that leakage of radioactivity into the process steam will be an extremely remote possibility; that Applicant has submitted sufficient information; and Staff has performed an adequate review with respect to process steam monitoring. The environmental effects of the process will be insubstantial.

58. The liquid waste treatment system is designed to collect, process and reuse or dispose of off-site all liquid waste, except for laundry waste, containing radionuclides generated during normal operation of the Plant. (PSAR Applicant's Ex. 1-B, Section 11.) About 120 gallons per day will be the only waste containing radionuclides from the Plant that will be released to the Tittabawassee River during normal operation. The Applicant estimates that the gross activity in the dilution stream from this laundry

waste, based on operation with 1% failed fuel for a full year will not exceed 25 pico curies per liter on an annual average, i.e., equivalent to about two curies per year. (PSAR Applicant's Ex. 38-E, p. 11.1-1.) Using this upper limit concentration, the Applicant calculates a potential dose to a hypothetical individual who consumes 2200 cc's per day of water from the river and eats 37 lb of fish per year from the river to be about 0.8 mrem/year. (PSAR Applicant's Ex. 38-E, p. 11.8-11.)

59. Potentially high-activity waste-gas is routed to the waste-gas surge tank where its activity is monitored. In the event of high levels of radioactivity, the waste-gas is routed to waste-gas decay tanks where such gases can be stored for up to sixty days to permit decay of all of the radioactive gases, other than krypton 85, to essentially zero. (PSAR Applicant's Ex. 1-B, p. 11-7; ASER, p. 4.2-4A.)

60. Applicant estimated that in the event both reactors operate for a full year with 0.1% failed fuel, the quantity of Kr-85 and Xe-133 released through the radwaste treatment system will be about 1224 curies and 50 curies, respectively. The applicant further calculated the dose to an individual continuously present at the site boundary for a full year to be about 0.46 mrem/year. (ASER Applicant's Ex. 38F-1, Section 4.2.) A calculation of the dose using 60 days' holdup and 1% failed fuel would be approximately 4.6 mrem/year. This dose is a small fraction of 10 CFR Part 20 and is less than the dose specified in the proposed Appendix I to 10 CFR Part 50.

61. The solid waste treatment system consists of tankage and facilities for collecting and packaging spent demineralizer resins and evaporator bottoms and for packaging contaminated items such as spent filter elements, rags, clothing, etc. All radioactive material from the solid waste system will be shipped off-site for storage by AEC licensed contractors. (PSAR Applicant's Ex. 1-B, p. 11-8.)

In the Board's view, the environmental effects of the normal releases of radioactivity and disposal of solid wastes are minimal.

62. While no aquatic environmental studies have been conducted by Applicant or the Staff, there have been numerous studies conducted by the Michigan Water Resources Commission, Michigan Department of Natural Resources and by Dow over the years. (ASER Applicant's Ex. 38F-1, Section 3.2.2.)

63. The Michigan Water Resources Commission is implementing a program to improve discharges into the river and improve river water quality. The Tittabawassee River from Midland to its confluence with the Saginaw River is designated to be upgraded not later than January 1, 1974, for intolerant fish warmwater species and agricultural uses. (Tr. 5664-65.) Applicant will be required to conduct a thorough ecological study of the site and its environs prior to Plant operation to establish base line values as recommended by the Staff. Applicant has committed itself to discharges that are significantly lower than those permitted by the standards for thermal releases and total dissolved solids. The Board accepts the conclusion that the proposed use of Lake Huron water by the Plant will not create any incremental environmental effects. However, there will be some destruction of aquatic life in intake water from the Tittabawassee River. Because of the presently depressed quality of the river, the amount to be destroyed is conjectural,[21] but even after the river is improved, the aquatic life destroyed should not be significant.

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[21] Applicant submitted only a preliminary design of the intake structure for taking water from the river to the pond, pending the results of a study which it agreed to undertake as to the type and size of fish to be expected in the river after upgrading. The Board understands that the final design will incorporate the Staff's recommendation that the intake flow velocity should be less than one foot per second. (See Finding No. 77.)

64. Intervenors alleged that because of the unique location of the Plant adjacent to a large chemical complex, the effects of radioactive effluents from the Plant might combine synergistically with the effect of chemical effluents to produce a combined effect greater than the sum of the separate effects. The synergistic effects considered included both the physiological effect of combined dosages of the chemical and radiological effluents on the tissue of human recipients and the interaction of the radiological and chemical effluents in the environment to produce a reactant which could have a different effect on the human recipient.

65. Saginaw Intervenors requested a list of all chemical effluents discharged to both the air and water from the Dow complex. (Tr. 1500.) The Board ordered Dow to submit a list of effluents expected to be discharged from its facilities in 1975, the year in which the Plant was originally scheduled to start operation. (Tr. 1502.)

66. Although repeatedly invited to submit evidence in support of their claims of synergism, Saginaw Intervenors never did so. However, at the environmental hearing, Mapleton did produce three witnesses on the subject:[22] Dr. Richard Meierotto (Tr. 8248-8291), Dr. Carl Nordahl (Tr. 8487-8517) and Dr. Ernest Sternglass (Tr. 8360-8487).[23]

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[22] Technically, the evidence of synergism at the environmental hearing was admissible only as to the cost-benefit analysis. However, with respect to synergism, as indeed with respect to other safety questions, the Board was always receptive to any *affirmative* showing by Intervenors.

[23] After the close of the hearing, counsel for Mapleton requested (letter of June 21, 1972) that a letter written by Professor Morris H. DeGroot, which was referred to by Dr. Sternglass, be admitted as evidence of the belief of Dr. DeGroot that there is substantial probability that Dr. Sternglass' hypothesis correlating radioactive discharges with infant mortality is correct. Since Dr. Sternglass remarks on infant mortality were not relevant to synergism—about which he was supposed to be testifying—admission of the letter would serve no relevant purpose.

Viewed in the light most favorable to Intervenors, and without considering the countervailing evidence of Applicant and the Staff, the evidence fails to establish that, at the levels of concentration involved here, there will be any interaction which would tend to increase radiation effects from the Plant, or the chemical effects from Dow. And when one considers the testimony of Applicant and Staff witnesses, the evidence is overwhelming against a finding of "synergism".

67. Applicant furnished information with respect to potential public exposures to radioactivity from postulated accidents in the course of Plant operation. (ASER Applicant's Ex. 38F-1, as amended by Ex. 38G, Section 4.2.2.) The information submitted was in accord with guidance issued generally to Applicants by the Commission on September 1, 1971. The classes of accidents range from those that can be expected to occur during the life of the Plant and have trivial consequences to those that are never expected to occur but could have more severe consequences. However, those accidents with more severe consequences have a probability of occurrence so small that their environmental risk is extremely low. We will discuss the question of accidents again in connection with alternatives, but for purposes of the cost-benefit analysis, we find the cost to be minimal.

68. Mapleton Intervenors raised questions concerning the environmental costs of decommissioning the Plant at the end of its useful life. Neither Applicant nor its contractor has had any experience with decommissioning a nuclear plant. (Tr. 6893.) The AEC has had some experience although not with a plant of the proposed size. The Board is satisfied that decommissioning is possible. The environmental effects of the most likely (given today's technology) method of decommissioning do not appear substantial except for the loss of use of a few acres of land occupied by sealed buildings. The estimates of cost of de-

commissioning are quite speculative; however, the Board accepts as generally indicative of those costs Applicant's estimate of $35,000,000—present discounted worth $8,000,000 (Tr. 7820-21).

69. Mapleton Intervenors also contended that there would be substantial fogging and icing in the area around the cooling pond (including Mapleton). The evidence even of Mapleton's own witness does not support the contention. (Tr. 8317, 8322.) The effect on Mapleton seems likely to be negligible and even in the area close to the pond, the effects seem likely to be insubstantial and the environmental costs minimal. The evidence does, however, demonstrate the need for further study of the effects of cooling ponds and part of the surveillance program of Applicant (see Finding No. 77) should include a study of the duration, intensity and extent of fog and icing in the surrounding area.

70. As noted above, the Board is satisfied that the benefits outweigh the costs. The real question comes with respect to alternatives. Assuming that the power needs are to be met, are there better alternatives? The evidence demonstrates that there are no hydro sites available, that a pumped storage facility would not meet the load needs, that gas is not a viable alternative for power use, and that outside sources are unavailable. (ASER Applicant's Ex. 38F-1, Section 5.2.) The question of alternatives is then boiled down to a choice between nuclear and fossil (either oil or coal) fuel at the proposed location or at some other location.

71. So far as the choice between nuclear and fossil plants is concerned, the evidence demonstrates a considerable cost advantage of nuclear fuel over oil or coal. (ASER Applicant's Ex. 38F-1, Tr. 7011-42, 7917-23.) While long run cost estimates must be speculative, the Board is of the view that they are reasonable, and no contrary estimates were introduced.[24] But large as the estimated cost differ-

[24] The cost advantage probably reflects the relative scarcity of low sulphur coal and oil compared to uranium, so that the choice of nuclear fuel is also consistent with the objective of preserving scarce raw materials. However, the Board does not feel that the impact of a single plant on fuel reserves is sufficient to warrant a choice on that basis.

entials are, they would not override any significant environmental advantages of a fossil fuel plant in this case. Are there such? The Board finds that there are not.

72. The major environmental effects of fossil fuel plants are the release to the atmosphere of fly ash and sulphur dioxide. By contrast, such air pollution from nuclear plants is essentially nil. Light-water moderated nuclear plants are less thermally efficient than fossil plants and discharge more waste heat in the cooling water. However, the use of a cooling pond or cooling tower will minimize the problem so that in the case of the proposed plant, the comparative disadvantage will be an increase in fogging and icing.

73. The major environmental effects from the nuclear plant are from releases of radioactivity in normal operation and from the possibility of accidents. The permissible releases of radioactivity in normal operation are now governed by Part 20 of the AEC regulations. The expected releases from this plant do not exceed Part 20 limits. However, under the regulations, we must take into account the enviornmental impact of radiation releases even within the standards. There are no known effects of radiation in the amounts contemplated to be released from this plant in normal operation, although it is assumed that there are genetic effects and that there may be cumulative effects of a combination of this radiation with other radiation. Weighed by a reasonable scale, these potential costs cannot tip the balance against nuclear power here. The major argument of intervenors is that not enough is known about the long-term effects of small doses and that the plant should not be licensed until such effects are known. This

really is an argument that no nuclear plants should be constructed until we know all that there is to know about low level radiation effects. Such an argument is untenable in light of the Atomic Energy Act. The judgment has been made there that atomic energy must be used for production of electricity and there is nothing in the National Environmental Policy Act which overrides that judgment.

74. Apart from questions of cost, the choice essentially narrows down to weighing the known environmental effects of fossil plants against the possibility of nuclear accidents,[25] indeed, against the possibility of a serious accident not contained within the reactor building. It is widely conceded that the possibility of such an accident is extremely remote. In our view so far as any particular reactor is concerned, the chances of a serious accident involving damage to the public is vanishingly small. This is not to say that such accidents will certainly never happen, but only that the odds of an accident happening at a particular reactor are incalculably small. For purposes of a cost-benefit analysis, we believe they must be taken as insubstantial.

75. Given the already substantial problem of air pollution in the Midland area, we conclude that nuclear power is clearly preferable to available alternatives.

76. Turning to the question of alternative sites, an important feature of the proposed project is its dual-purpose nature. In addition to supplying electricity for the Applicant's system, the plant will produce process steam for use by Dow. Applicant concedes that it would not locate the proposed installation at the proposed site but for this feature. It is thus necessary to consider as an alternative the location of the plant elsewhere and the independent

[25] The Board does not regard decommissioning as a substantial environmental problem; however, as noted above, it may be a significant cost factor.

supply of steam to Dow by some other source.[26] We have not considered, and we do not believe it is within our province to do so, the possibility that there might be environmental benefits from closing down some or all of Dow's operations. If the plant is not built where it is now planned, Dow will have to continue to produce its own steam. Since a small nuclear plant for that purpose would be extremely uneconomical (and would pose most of the same problems as the proposed reactor) as a practical matter, the result would be construction of a new fossil plant. Thus, any other site would have to demonstrate sufficient advantage over the proposed site to outweigh the air pollution from the new Dow fossil steam generating plant. Applicant had adduced considerable evidence that other sites available to it would not have any such advantage and no one else has suggested an alternative site for consideration. We conclude then that there is no preferable alternative.

77. Assuming that the proposed plant will be built at the proposed site, a final question is whether there is a preferable alternative cooling system for condenser water. An important consideration in this respect is that in order to supply coolant water in periods of low river flow, there will have to be a pond built at the location. The use of this pond for cooling thus has a natural cost advantage over cooling towers, all the cost of which would be supplemental to the cost of the pond. (FES, XI-2, 3). The Applicant discussed and the Staff considered the use of both dry and wet cooling towers. Neither form of wet tower (mechanical draft or natural draft) would offer any significant environmental advantages. The use of a dry tower would in the Staff's view eliminate fogging and icing and reduce water consumption, but these benefits would only be achieved at considerable cost in thermal efficiency as

[26] The evidence is clear that it is not economically feasible to supply steam to Dow from a plant at some other remote location. (Tr. 6857-6860.)

well as high capital costs. (FES, XI-37.) Those costs seem hardly justified to avoid the relatively small problem of fogging and icing expected—particularly in view of the lack of experience with dry cooling towers. We find that in the circumstances of this plant; the proposed cooling system is preferable to available alternatives.

78. The Staff's conclusion that the construction permit should be granted was subject to certain conditions. These conditions, which are set forth in Paragraph 7 of the Staff's Final Environmental Statement (FES), included a modification of the water intake design to minimize fish loss, the relocation of certain transmission lines, the conduct of ecological studies and development of surveillance programs, etc. Applicant has agreed to all of these recommendations except that in 7(f) of the FES which would have required Applicant to "prevent any discharge which would result in increasing the phosphorus concentrations in the river above 0.05 ppm". As a substitute for 7(f), Applicant has agreed to treat phosphates so that total discharge including laundry waste and start up waste based on the actual average will not exceed 35 pounds per day exclusive of the pond reconcentration of existing phosphate levels in the river. The Staff agreed to that substitution and the Board sees no reason why the proposal should not be satisfactory. The Board would like to note for the record that its conclusions are based on the understanding the Applicant will carry out the recommendations to which it has agreed.

79. The Board has reviewed the entire record of this proceeding, including the limited appearance statements and the proposed findings of fact and conclusions of law submitted by the parties, and replies thereto submitted by the Applicant. All the proposed findings and conclusions submitted by the parties which are not incorporated directly or inferentially in this Initial Decision are herewith rejected for the reason that there is not reliable, probative,

and substantial evidence in the record to justify their acceptance, or because they are unnecessary to the rendering of this Initial Decision.

V. Conclusions

80. Upon consideration of the record of this proceeding and the findings of fact and conclusions, the Board has determined that:

(1) In accordance with the provisions of 10 CFR 50.35(a):

(a) The Applicant has described the proposed design of the facility including, but not limited to, the principal architectural and engineering criteria for the design, and has identified the major features or components incorporated therein for the protection of the health and safety of the public;

(b) Such further information as may be required to complete the safety analysis and which can reasonably be left for later consideration, will be supplied in the final safety analysis report;

(c) Safety features or components which require further development have been described and the Board has been assured the Applicant will conduct research and development to satisfactorily resolve any associated safety questions before the latest date stated in the application for completion of construction of the proposed facility.

(2) The proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public;

(3) The Applicant is technically qualified to design and construct the proposed facility;

(4) The Applicant is financially qualified to design and construct the proposed facility;

(5) The issuance of a permit for the construction of the facility will not be inimical to the common defense and security or to the health and safety of the public.

81. Upon consideration of the record of this proceeding and the findings of fact and conclusions, the Board has determined that in accordance with the provisions of Section A.11 of Appendix D, 10 CFR 50:

(1) The requirements of Section 102(2)(C) and (D) of the National Environmental Policy Act and Appendix D of 10 CFR 50 have been complied with in this proceeding;

(2) The appropriate action to be taken is to authorize issuance of the construction permit.

VI. Order

82. Wherefore, pursuant to the Atomic Energy Act as amended, and the Commission's Regulations, IT IS ORDERED that the Director of Regulation is authorized to issue a construction permit to Consumers Power Company. IT IS FURTHER ORDERED, in accordance with Sections 2.760, 2.762, 2.764, 2.785, and 2.786 of the Commission's "Rules of Practice", that this Initial Decision shall be effective immediately upon issuance and shall constitute the final decision of the Commission subject to the review thereof pursuant to the above-cited Rules.

Atomic Safety and Licensing Board

Arthur W. Murphy, *Chairman*

Clark Goodman

David B. Hall

Issued at Washington, D. C.,
this 14th day of December 1972.

ATOMIC ENERGY COMMISSION REPORTS

Volume 6

Opinions and Decisions of the
Atomic Energy Commission
with Selected Orders

January 1, 1973, to December 31, 1973

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

Atomic Safety and Licensing Appeal Board

Alan S. Rosenthal, *Chairman*
Dr. John H. Buck, *Member*
William C. Parler, *Member*

In the Matter of
Consumers Power Company (Midland Plant, Units 1 and 2) — Docket Nos. 50-329, 50-330

Mr. Harold F. Reis, Washington, D.C., for the applicant, Consumers Power Company.

Mr. Myron M. Cherry, Chicago, Illinois, for the Saginaw Intervenors (Saginaw Valley Nuclear Study Group, *et al*)

Mr. Irving Like, Babylon, N.Y., for the Mapleton Intervenors (Nelson Aeschliman, *et al*)

MR. MILTON R. WESSEL, New York, N.Y., for Intervenor, Dow Chemical Company.

MR. DAVID E. KARTALIA, for the AEC Regulatory Staff.

Memorandum and Order

(ALAB-101)

By initial decision dated December 14, 1972, the Atomic Safety and Licensing Board authorized the issuance of a construction permit to Consumers Power Company (the applicant) for the Midland Plant, Units 1 and 2.

Thereafter, on January 7, 1973, the Saginaw Intervenors filed with the Licensing Board a motion, with a supporting affidavit, seeking "to require the presiding officer to recall and revoke the initial decision and to declare the * * * Licensing Board biased." The claim of bias was premised in large part on the views expressed by Arthur W. Murphy, Chairman of the Licensing Board, in an article which he authored and which appeared in the October, 1972 issue of the Columbia Law Review.[1] Because of the asserted bias, the intervenors sought to have a new licensing board appointed, "with instructions to have a new hearing on all relevant issues." By Order dated February 1, 1973, the Licensing Board denied the motion.

On January 15, 1973, after the filing of the motion to recall but before the Licensing Board's denial of that motion, the Saginaw Intervenors filed exceptions to the initial decision. One of these exceptions (VI. B) asserts that the Licensing Board was "personally biased against intervenors" and that it "prejudged contested issues"; the

[1] Arthur W. Murphy, *The National Environmental Policy and the Licensing Process: Environmentalist Magna Carta or Agency Coup de Grace?*, 72 Columbia Law Review 963 (October 1972).

As will appear later, the bias claim was also directed to certain statements made by other members of the Board.

exception cites in particular the same Columbia Law Review article. The intervenors referred to a footnote in their previously filed motion to recall, which had recited their intention to treat the motion as denied if they had not received advice to the contrary by January 15, 1973, the last date on which intervenors could file exceptions to the initial decision; and they take exception to such "denial."[2]

Although the Saginaw Intervenors' motion to recall was not formally designated as a motion for disqualification, within the meaning of 10 CFR § 2.704(c), we regard it as such, despite the question which has been raised concerning the Licensing Board's jurisdiction over that motion.[3] Denial of such a motion by the Licensing Board (assuming it had jurisdiction over the subject matter) operates automatically to refer it to the Commission, and hence to us,

[2] Our consideration of this exception should not be taken as signifying our approval of the manner in which it was presented. The intervenors were not entitled to demand that the Licensing Board act upon the motion to recall prior to the expiration of the time for filing exceptions to the initial decision; nor were they entitled to treat their motion as having been denied if it were not acted upon within that time. Instead, the intervenors need only have (1) filed the motion to recall, unaccompanied by any purported directive to the Licensing Board concerning the timing of its decision on the motion; and (2) if—as occurred—their motion to recall was still pending as the time for filing exceptions approached, included in their exceptions one protecting against the possibility that the motion would be denied.

[3] The applicants argued, both before the Licensing Board and in their motion to us of January 9, 1973, that the Licensing Board did not have jurisdiction, after issuance of the initial decision, to act upon the recall motion. The staff argued that the Licensing Board retained jurisdiction under 10 CFR § 2.717(a), and it recommended that the Board exercise that jurisdiction to "ensure that if the Appeal Board is presented with the question of bias, the Appeal Board would have the full benefit of the ASLB's views on the matter." (Answer of AEC Regulatory Staff to Saginaw Intervenors' Motion, at p. 4.)

for review.[4] Since the issue of alleged bias and prejudgment is before us at least on exceptions to the initial decision, we need not determine the jurisdiction of a licensing board to entertain a motion to recall. In passing upon the claim of bias and prejudgment, we have, however, examined and considered all the documents bearing upon this claim which were filed by the parties.

Those documents reflect that the Saginaw recall motion was supported by the Mapleton Intervenors (who did no more than advise the Board of their support). It was opposed by the applicant, the AEC Regulatory Staff, and Intervenor Dow Chemical Company. The applicant argued that the motion had not been filed on a timely basis; and that, even if it were regarded as timely, it failed to put forth any valid grounds for disqualification. The staff advanced similar arguments. Dow opposed the motion primarily on the basis of timeliness.

With respect to the Saginaw Intervenors' exception VI. B, the applicant has urged that it be rejected. It generally asserts the same grounds on which it opposed the recall motion. But it also contends that the additional "evidence" of bias appearing in the exception was in fact a restatement of certain actions of the Licensing Board with which the intervenors disagreed and to which they had objected on the merits in other parts of their exceptions. The staff has indicated that the exception is "entirely without merit" and that it "generally" concurs in the applicant's comments.

For reasons hereinafter set forth, we have found (1) that the issue raised by the recall motion, as well as by the Saginaw Intervenors' exception VI. B, was not asserted in a timely manner, and (2) even if it had been timely asserted, there has been presented no bias which would require us to disqualify Chairman Murphy or either of the other members of the Licensing Board.

[4] *Northern Indiana Public Service Co.* (Bailly Generating Station, Nuclear 1), ALAB-76, WASH-1218 (Suppl. 1) 510 (October 30, 1972).

I

As is made eminently clear in their motion to recall and their exceptions to the initial decision, the intervenors' claim of bias is premised largely upon the views expressed by Chairman Murphy in his Columbia Law Review article. That article is a study of the impact of environmental legislation on the reactor licensing process. It was initially prepared as a report to the Committee on Licenses and Authorizations of the Administrative Conference of the United States. It adopts the general point of view that the National Environmental Policy Act (NEPA), or at least certain judicial constructions thereof, have imposed a burden on the reactor licensing process with which it cannot effectively cope. As illustrative examples of situations arising under NEPA which the author views as inconsistent with the current licensing structure, the article refers to certain assertions made in the *Midland* proceeding, as well as the litigation strategy adopted by intervenors in some cases.

The Saginaw Intervenors assert that the Board as a whole, but particularly Chairman Murphy, was "infused by a personal bias," thus rendering the initial decision a nullity. As evidence of bias the intervenors cite, in addition to the Columbia Law Review article, several selected rulings or record statements of the Licensing Board or its members. These will be discussed in greater detail later in this opinion (*infra,* pp. 65 and 66).

In their exceptions before this Board, the Saginaw Intervenors elaborate on the assertions which they had previously made before the Licensing Board. They characterize the article as showing a misunderstanding of the obligations of NEPA and a bias against enforcing that stat-

ute's mandate, and point to several parts of the initial decision where they believe that misunderstanding and bias to be manifested. Finally, they argue that disqualification does not require a showing that the bias of the Board members in fact affected the decision, but only that is in fact existed.

II

The assertions of the applicant, the staff, and Dow concerning the timeliness of the motion are founded on the purported knowledge of counsel for the Saginaw Intervenors (Myron M. Cherry) of the content of the law review article almost a year prior to the time that the recall motion was filed.

1. The article of course, appeared in the October, 1972, issue of the Columbia Law Review. Counsel for the Saginaw Intervenors states, in his supporting affidavit, that he did not receive a copy of that article until December 23, 1972, approximately a week after the issuance of the Licensing Board's initial decision.[5] In their motion, the Saginaw Intervenors assert that they "did not become fully aware until December 29, 1972, of the grounds of bias • • • and did not know until January 5, 1973 that the Regulatory Staff would itself refuse to take action consistent with this motion."[6] On the other hand, an affidavit of the counsel for Dow indicates that a copy of the October, 1972 issue of the Columbia Law Review was received in his office on November 6, 1972.[7]

But it is not relevant when counsel for the Saginaw Intervenors first learned of the law review article itself, because it is apparent that he should have become aware

[5] Affidavit of Myron M. Cherry, dated January 7, 1973, par. 4.

[6] Saginaw Intervenors' Motion, par. 3, p. 4.

[7] Affidavit of Milton R. Wessel, dated January 16, 1973, at p. 2.

of its general content, and of Chairman Murphy's views on the relationship of NEPA to the licensing process long before its formal publication. As we have indicated, the article itself evolved from an Administrative Conference report. The final report is dated August 1, 1972 but a first draft (which in relevant aspects is identical to the law review article) was circulated for comment to numerous interested persons and groups by letter of April 20, 1972 from the Chairman of the Administrative Conference.

Mr. Cherry was one of the addressees of that letter. His affidavit acknowledges that he became aware of the draft report "some time in the summer of 1972" but avers he did not deal with it at any great length because of his involvement in another proceeding.[8] In a supplement to their exceptions, the Saginaw Intervenors explained the delay from April, 1972 to the summer of 1972 on the basis that during the spring and summer, "Intervenors' counsel was spending full time in Washington, D.C. and thus was away from his office in Chicago."[9]

Whatever may have been the exact date on which Mr. Cherry became aware of the draft report, it seems clear that no later than the summer of 1972 he either was, or at the very least should have been, cognizant of the Board Chairman's views on the relationship of NEPA to the licensing process which later were published in the law review article.[10] Moreover, as the Board indicates in its denial

[8] Affidavit of Myron M. Cherry, dated January 7, 1973, par. 4, at pp. 3-4.

[9] "Motion and Supplement to Saginaw Valley, *et al.*, Intervenor's Statement of Exceptions to the Initial Decision filed on January 15, 1973," at p. 4. We agreed to consider this Supplement by our Order of January 23, 1973.

[10] We do not think it unreasonable to expect even a busy lawyer to take the time at least to peruse a received document in circumstances where (1) that document was authored by the Chairman of an adjudicatory tribunal before which he is representing a client

of the Saginaw Intervenors' motion, the Chairman and Mr. Cherry were co-panelists in November, 1971 at a session of an American Law Institute—American Bar Association Course of Study in Washington, D.C. at which both spoke on a number of the issues referred to in the law review article.

2. For motions for the disqualification of an adjudicator to be entertained, they must file in a timely manner. The Administrative Procedure Act, which applies to Commission licensing proceedings, explicitly so provides. 5 U.S.C. 556(b). The failure of a party to file a motion for disqualification once the information giving rise to such a claim is available to him amounts to a waiver of the disqualification objection. *Gilligan, Will & Co.* v. *S.E.C.*, 267 F.2d 461, 468 (2d. Cir. 1959). Moreover, as a matter of basic equity, a party in a proceeding such as this may not

> remain silent, await the decision of the Commission, and then, doubtless because of its disappointment, seek for the first time to asperse the objectivity of a quasi-judicial officer who joined in the challenged opinion.[11]

Any fair analysis of the Saginaw Intervenors' attempt to disqualify Chairman Murphy must lead to the conclusion that the Saginaw Intervenors are doing exactly what the *Safeway* court so explicitly disapproved. The issue raised by the Saginaw motion, as well as by exception VI. B., was clearly not asserted in a timely manner.

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in major litigation; and (2) it is obvious from the title of the document that its subject matter has a direct relation to that specific type of litigation.

[11] *Safeway Stores, Inc.* v. *Federal Trade Commission*, 366 F. 2d. 795, 802 (9th Cir. 1966).

III

While we would have been justified in rejecting the intervenors' claim of bias solely on the basis of the untimely manner in which it was raised, we have nevertheless also considered it on its merits, and are rejecting it on that basis as well. In this part of this opinion, we shall discuss the statutory and judicial authority which we believe to be governing; and, in part IV, we shall apply that authority to the questions which are before us.

The grounds on which a member of an adjudicatory body such as an Atomic Safety and Licensing Board may be disqualified are both well-defined and well-recognized. The principal source of the governing rules respecting such disqualification is the Administrative Procedure Act, which is specifically applicable to the Commission's licensing proceedings.[12]

The Administrative Procedure Act recognizes essentially two broad categories of conduct which may give rise to disqualification from a particular proceeding of an agency employee who has adjudicatory responsibilities in that proceeding. First, the Act provides for a separation of the adjudicatory functions within an agency from investigative and prosecuting functions.[13] Secondly, the Act requires that the functions of presiding officers (which would include the functions of members of Atomic Safety and Licensing Boards) be "conducted in an impartial manner," and that a presiding officer may be disqualified for "personal bias or other disqualifications."[14]

The statutory language which underlies the second, and far broader, of these categories of disqualification is simi-

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[12] Section 181, Atomic Energy Act of 1954, as amended, 42 U.S.C. 2231.

[13] 5 U.S.C. 554(d).

[14] 5 U.S.C. 556(b).

lar to that appearing in Section 21 of the Judicial Code,[15] which is applicable to the disqualification of federal district judges. The language is the outgrowth, as well as the subject, of a long line of judicial decisions. The basic rule has been elucidated by the Supreme Court in *In re Murchison* in the following terms:

> A fair trial in a fair tribunal is a basic requirement of due process. Fairness of course requires an absence of actual bias in the trial of cases. But our system of law always endeavored to prevent even the probability of unfairness. To this end no man can be a judge in his own case and no man is permitted to try cases where he has an interest in the outcome.[16]

From the judicial application of these general criteria to specific types of factual situations, there may be gleaned a number of identifiable types of conduct which have been viewed by courts as grounds for disqualification. Those will be described *seriatim:*

a. The first—and most obvious—situation calling for disqualification is one in which the adjudicator has a direct, personal, substantial pecuniary interest in a result which may be reached in a proceeding. *Tumey* v. *Ohio,* 273 U.S. 510 (1927).

b. Another equally obvious such situation is that where, in the terms of the Administrative Procedure Act, the adjudicator has a "personal bias." 5 U.S.C. 556(b). See also *Northern Indiana Public Service Co.* (Bailly Generating Station, Nuclear 1), ALAB-76, *supra,* at p. 511.

c. Under the specific provision of the Administrative Procedure Act, *supra,* an individual who has served a prosecutive function in a case may not thereafter serve in

[15] 28 U.S.C. 144.

[16] 349 U.S. 133, 136 (1955).

an adjudicative capacity, even though a substantial time period may have elapsed between his respective service in the two roles. Thus, the Chief Counsel and Staff Director of a Congressional Committee which conducted an investigation of the drug industry could not thereafter participate as a member of the Federal Trade Commission in a case involving the pricing practices of the same companies which were the subject of the Congressional investigation. *American Cyanamid Co.* v. *Federal Trade Commission,* 363 F.2d 757 (6th Cir. 1966).[17]

d. Prejudgment, as well as the appearance of prejudgment, has also been judicially recognized as a ground for disqualification; however, in fashioning the standard in this area, the courts have made it clear that the prejudgment which is proscribed is a prejudgment of *facts* in controversy *but not of legal issues.* Thus, in a landmark decision in this area, the Supreme Court found that the Secretary of Agriculture was not disqualified from participating in a proceeding on remand to his department, even though he had publicly criticized on policy grounds the court decision which had ordered the remand. Distinguishing sharply between the policy questions upon which the Secretary had spoken, and the factual issues which were to be considered by him on remand, the Court reasoned:

> That [the Secretary] not merely held, but expressed, strong views on matters believed by him to have been in issue, did not unfit him for exercising his duty in subsequent proceedings ordered by this Court.[18]

[17] See also *Texaco, Inc.* v. *Federal Trade Commission,* 336 F. 2d. 754 (D.C. Cir. 1964), vacated and remanded on other grounds, 381 U.S. 739 (1965); *Amos Treat & Co.* v. *S.E.C.,* 306 F. 2d. 260 (D.C. Cir. 1962). *Cf. Safeway Stores, Inc.* v. *Federal Trade Commission, supra; R. A. Holman & Co.* v. *S.E.C.,* 366 F. 2d. 446 (2d. Cir. 1966).

[18] *United States* v. *Morgan,* 313 U.S. 409, 421 (1941).

The Court also assumed that cabinet officers charged by Congress with adjudicatory functions were not "flabby creatures any more than judges are"; that "[b]oth may have an underlying philosophy in approaching a specific case"; and that "[b]oth are • • • men of conscience and intellectual discipline, capable of judging a particular controversy fairly on the basis of its own circumstances." [19]

The Supreme Court similarly has permitted members of the Federal Trade Commission to participate in a proceeding where it was charged that respondents had engaged in an unfair method of competition, and in price discrimination, arising out of a basing-point pricing system, even though the Commission had previously expressed views, in reports to Congress and in Congressional testimony, on the unlawfulness under the Sherman Act of the basing-point pricing system. As the Court stated:

> the fact that the Commission had entertained such views as the result of its prior *ex parte* investigations did not necessarily mean that the minds of its members were irrevocably closed on the subject of the respondents' basing-point practices.[20]

e. The federal courts have made it equally clear that the appearance of either bias or the prejudgment of factual—as opposed to legal—issues in controversy will disqqualify an adjudicator from participating in a proceeding. Thus, in two separate cases, the Chairman of the Federal Trade Commission was disqualified from participating in proceedings where he had previously made speeches which took a position on factual matters directly in controversy. *Cinderella Career and Finishing Schools, Inc.* v. *Federal Trade*

[19] *Ibid.*

[20] *Federal Trade Commission* v. *Cement Institute* 333 U.S. 683, 701 (1948); see also *Skelly Oil Co.* v. *Federal Power Commission*, 375 F. 2d 6 (10th Cir. 1967).

Commission, 425 F.2d 583 (D.C. Cir. 1970); *Texaco, Inc.* v. *Federal Trade Commission, supra.* In both cases, the court expounded its test for disqualification as being whether

> a disinterested observer may conclude that [the agency] has in some measure adjudged the facts as well as the law of a particular case in advance of hearing it.[21]

In emphasizing that the appearance of bias prejudgment is as valid a basis for disqualification as is actual bias or prejudgment, a court noted: "• • • an administrative hearing • • • must be attended, not only with every element of fairness but with the very appearance of complete fairness. Only thus can the tribunal conducting a quasi-adjudicatory proceeding meet the basic requirement of due process." *Amos Treat & Co.* v. *S.E.C.*, 306 F.2d 260, 267 (D.C. Cir. 1962).

Under this rule, actual bias or prejudgment need not be shown Indeed, the rule "may sometimes bar trial by [those] who have no actual bias and who would do their very best to weigh the scales of justice equally between contending parties." *In re Murchison, supra,* at p. 136. As one judge cogently remarked,

> We must presume that a fair hearing was denied if a disinterested observer would have reason to believe that the Commissioner had 'in some measure adjudged the facts • • • of a particular case in advance of hearing it.' [footnotes omitted].[22]

[21] *Cinderella Career and Finishing Schools, Inc.* v. *Federal Trade Commission, supra,* at p. 591; *Texaco, Inc.* v. *Federal Trade Commission, supra,* at p. 760 [in each case quoting language from *Gilligan, Will & Co.* v. *S.E.C.*, 267 F. 2d 461, 469 (2d Cir. 1959), cert. den. 361 U.S. 896 (1959)].

[22] *Texaco, Inc.* v. *Federal Trade Commission, supra,* concurring opinion of Judge Washington, 336 F. 2d at p. 764.

The rule governing the appearance of bias or prejudgment is ex-

In sum, therefore, an administrative trier of fact is subject to disqualification if he has a direct, personal, substantial pecuniary interest in a result; if he has a "personal bias" against a participant; if he has served in a prosecutive or investigative role with regard to the same facts as are in issue; if he has prejudged factual—as distinguished from legal or policy—issues; or if he has engaged in conduct which gives the appearance of personal bias or prejudgment of factual issues.

IV

As previously pointed out, the Saginaw Intervenors' claim of bias is premised largely upon the views expressed by Chairman Murphy in his Columbia Law Review article. But, as the Licensing Board indicated in its order of February 1, 1973 denying the claim of bias, the exact legal grounds on which disqualification is being sought are not entirely clear. The Licensing Board treated the claim as one of prejudgment since it was unaware of any circumstances which could give rise to a claim of personal bias—*i.e.*, the manifestation of animosity or partiality toward one or more of the parties or their counsel. Our review of the record convinces us that the Board was justified in so treating the claim.

What, then, might Chairman Murphy or other members of the Board have prejudged? As is clear from the affidavit of intervenors' counsel in support of the recall motion, the gravamen of interventors' complaints is that, before the *Midland* case had become ripe for adjudication, Chairman Murphy had reached certain conclusions. Specifically, according to counsel, he—"and hence the Board"—had decided that NEPA was "interfering with the production

pounded in greater detail in the opinion we are issuing today in the *LaSalle* proceeding, to the facts of which we have found that rule applicable. *Commonwealth Edison Co.* (LaSalle County Nuclear Power Station, Units 1 and 2), ALAB-102.

of needed energy and development of nuclear power" and, accordingly, had failed to fulfill the requirements of NEPA. For this proposition, the affidavit pointed solely to the law review article.

It is true, of course, that the article expressed skepticism regarding whether the requirements of NEPA could be fulfilled in the existing licensing process. But the exposition of such thoughts on legal matters was sanctioned by the Supreme Court in its *Morgan* and *Cement Institute* decisions, *supra*. Moreover, we note that the Licensing Board disclaims any belief on its part that NEPA is not to be enforced:

> • • • the Chairman, in his law review article, expressed the view that the present licensing structure is not adequately designed to handle the job which has been given to it by the legislature and the courts. The Board, notwithstanding the Chairman's view that the system is inadequate to the job, took the case as given to it and did the best job it could. [Licensing Board's Order at p. 4.]

We turn now to exception VI. B of the Saginaw Intervenors, which points to specific sections of the law review article as indicating prejudgment. Those sections discuss such matters as the ability of licensing boards to conduct a meaningful environmental review, the general utility of the Commission's operating license hearings, whether NEPA can be used to nullify an agency's regular mission. Again, these are legal issues, and not factual questions in dispute in this proceeding.

It is true that the Saginaw Intervenors emphasize a statement in the article concerning the inevitability of the need for a substantial increase in generating capacity[23] —which is a factual matter. Saginaw Intervenors assert

[23] 72 Col. Law Rev. at p. 963.

that the need for additional generating capacity is an issue in this proceeding. But even though Chairman Murphy may believe that "it seems inevitable that there will have to be a substantial increase in generating capacity, over the next ten years," it does not follow that the *Midland* facility—or indeed any other particular reactor—need be built. In this connection, we find nothing in the article or in the record to suggest that to any extent the Chairman related his general observations respecting increased overall electric power needs to the question as to whether the issuance of a construction permit for this specific plant should be authorized.

Reviewing the entire law review article, including each of the passages to which the Saginaw Intervenors have referred, we find no evidence of prejudgment of any facts in issue. Nor do we find any appearance of prejudgment. All that we find is an individual who may have certain crystalized views—indeed, who may possess an "underlying philosophy" [24]—on the application of NEPA to the Commission's licensing process. Previous decisions of this Board and the Commission have explicitly recognized this situation as nondisqualifying. Thus, in the *Bailly* case, we referred to Professor Davis' view, based on his analysis of the jurisprudence in this area, that "the fact that a member of an adjudicatory tribunal may have a crystallized point of view on questions of law or policy is not a basis for his disqualification." [25] And in an earlier decision, the Commission squarely ruled that

> Philosophic or professional attitudes or similar, generalized mental attitudes do not constitute disqualifying bias.[26]

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[24] *U.S.* v. *Morgan, supra,* at p. 421.

[25] *Northern Indiana Public Service Co.* (Bailly Generating Station, No. 1), ALAB-76, *supra,* at p. 511.

[26] *In the Matter of Long Island Lighting Co.* (Shoreham Nuclear Power Station Unit No. 1), Commission Memorandum and Order dated October 28, 1970, at p. 5.

Siganaw Intervenors additionally cite remarks by various members of the Licensing Board, and Licensing Board rulings, which are said to be "clear statements of bias." [27] Taken in context, none of the cited remarks or rulings in our view indicates any bias or prejudgment of facts in issue. To the extent, if any, that they may indicate a view on legal matters in issue, they are of course subject to our pending review on the merits, as is also the Board's approach and rulings in applying the dictates of NEPA to this proceeding.

V

We have determined that, measured against the settled principles relating to disqualification for personal bias or prejudgment, the law review article in question does not provide a legally sufficient basis for the invalidation of the initial decision of the Licensing Board in this proceeding. We do not, however, wish that conclusion to be taken as a tacit approval of the publication of that article by the Chairman of the Board. We make, therefore, these few additional observations.

We appreciate that the Chairman performs his adjudicatory function for the Commission on a part-time basis and that he has other significant responsibilities which are entitled to recognition. It is also true that, as previously noted, the genesis of the article was a report he had prepared for the Administrative Conference of the United States. But considerations of this nature do not lessen the distinct obligation of an adjudicator to exercise particular care to avoid doing anything—in a governmental or private capacity—which might erode public confidence in his ability to dispatch his quasi-judicial duties in an entirely dispassionate manner.

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[27] Affidavit of Myron M. Cherry, dated January 7, 1973, par. 10.

The fulfillment of this obligation may not wholly foreclose a widely-disseminated critique on the adjudicatory process of which he is a part, or on a statute (*e.g.* NEPA) which he is called upon to enforce. But we believe that greater circumspection might have been in order in this instance. In this regard, we have particular reference to the allusions in the article to the *Midland* case itself. Although these allusions may have been deemed perfectly innocuous by their author, it seems of doubtful prudence for an adjudicator to comment in such fashion upon any aspect of a case still before him for decision.

VI

For the foregoing reasons, we conclude that the Saginaw Intervenors' claim of bias or prejudgment was not submitted on a timely basis and, in any case, did not advance any valid reasons for disqualification of Chairman Murphy or either of the other Board members. Accordingly, the Licensing Board's Order Denying Motion to Recall and Revoke Initial Decision, dated February 1, 1973, is *affirmed*. The Saginaw Intervenors' exception to VI.B to the initial decision is *denied*, without prejudice to our later consideration on the merits of the substantive matters raised therein.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

MARGARET E. DUFLO
Secretary to the Appeal Board

Dated February 20, 1973

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

ALAN S. ROSENTHAL, *Chairman*
DR. JOHN H. BUCK, *Member*
WILLIAM C. PARLER, *Member*

In the Matter of
CONSUMERS POWER COMPANY (Midland Plant, Units 1 and 2) — Docket Nos. 50-329, 50-330

Mr. HAROLD F. REIS, Washington, D.C., for the applicant, Consumers Power Company.

Messrs. MYRON M. CHERRY and ROBERT GRAHAM, Chicago, Illinois, for the Saginaw Intervenors (Saginaw Valley Nuclear Study Group, et al.).

Mr. HAROLD J. VOGEL, Minneapolis, Minn., for the Mapleton Intervenors (Nelson Aeschliman, et al.).

Mr. MILTON R. WESSEL, New York, N.Y. (Mr. JAMES N. O'CONNOR, Midland, Mich., with him on the brief), for the Intervenor Dow Chemical Company.

Mr. DAVID E. KARTALIA, for the AEC Regulatory Staff.

Memorandum and Order

(ALAB-106)

By initial decision dated December 14, 1972, the Atomic Safety and Licensing Board authorized the Director of Regulation to issue construction permits to Consumers Power Company (applicant), for a dual purpose pressurized water nuclear power plant, designated the Midland Nuclear Plant, Units 1 and 2. The plant, which is designed to produce not only electricity but, as well, process steam to be sold by applicant to the Dow Chemical Company, would be located

on the south shore of the Tittabawasee River in Midland County, Michigan at a site adjacent to an existing plant of the Dow Chemical Company.

Separate sets of exceptions to the initial decision were filed by the Mapleton Intervenors and the Saginaw Intervenors. Responses in support of the initial decision were filed by the applicant and the AEC regulatory staff. The Dow Chemical Company, another intervenor, filed a memorandum indicating support of the responses filed by the applicant and staff. Oral argument was directed by our order of February 12, 1973 (ALAB-100) and was held on March 14, 1973. Each of the above-mentioned parties participated.

We have not at this time completed our consideration of all of the many issues raised in this case. We nevertheless have determined that, with respect to one particular aspect of the case—quality assurance and quality control (QA)—, prompt decision and action on our part are necessary. Based on our review of the record, including the relevant exceptions and responses thereto, and the oral argument, we have concluded that the initial decision reflects an erroneous view of the ambit of a board's responsibilities in the QA area and, as a result, inadequately deals with issues which have been raised in that area (see transcript of oral argument, pp. 46-47, 78-106, 122-136, as well as Saginaw Intervenors' Exception III.F.). Since we find the record sufficient for us to resolve those issues and to impose conditions which will satisfy applicable requirements, we hereby do so, and are modifying the initial decision to reflect both the additional findings and the supplementary conditions wihch we believe are necessary on this record.

I

One of the most significant elements of the Commission's "defense-in-depth" approach to nuclear safety is its emphasis upon quality assurance and quality control in the

construction of nuclear power plants. Under current regulatory provisions, every applicant for a construction permit is required by 10 CFR § 50.34 to include in its preliminary safety analysis report (PSAR) a description of the QA program to be applied to the design, fabrication, construction, and testing of the structures, systems and components of the facility. Specific criteria for QA programs are spelled out in Appendix B to 10 CFR Part 50. Among other things, the regulations require the description of the QA program to include "a discussion of how the applicable requirements of Appendix B will be satisfied," 10 CFR § 50.34(a)(7).

Before the Licensing Board, the Saginaw Intervenors raised the issue whether the applicant would be likely to implement properly the QA program. In this connection, there were introduced into evidence AEC inspection reports which described, *inter alia*, a number of deficiencies in the applicant's implementation of the QA program in connection with work under a previously granted exemption.[1]

The Licensing Board considered the issue of quality assurance and quality control in paragraphs 28 and 29 of the initial decision. The Board also made the ultimate findings required by AEC regulations as a predicate to the issuance of a construction permit, including those encompassing the technical qualifications of the applicant and public health and safety matters. (Initial Decision par. 80(3) and (5)). The Board held that its only function respecting quality assurance and quality control was to ascertain whether the applicant has adopted a QA program which, *if implemented in accordance with the representations of the application*, will satisfy the requirements of Appendix B. The Board found it to be the responsibility of the Director of Regulations—and consequently beyond the ambit of its own re-

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[1] AEC Compliance Office Reports 329 and 330/70-1 through 329 and 330/71-1, introduced as Saginaw Intervenors' Exhibit 36 (Tr. 4571).

sponsibility—to assure that the program was in fact carried out as approved. (Initial Decision, par. 28).

The Licensing Board acknowledged that the AEC inspection reports in the record reflected, *inter alia*, some deficiencies in the applicant's implementation of the QA program in the construction activity which the applicant carried out under its exemption. The Board stated that it had considered these reports, but only for the limited purpose of determining whether there was "any evidence" which would be inconsistent with its making findings favorable to the applicant on the ultimate issues in the proceeding (e.g., technical qualification of the applicant, and whether issuance of construction permits would be inimical to the public health and safety). In that narrow context, it found "no such evidence." [2]

In Exception III. F., the Saginaw Intervenors challenge the Licensing Board's disposition of this issue, contending that the evidence in the record of "shoddy" QA practices demonstrates that the applicant is "incapable of, and cannot be relied upon to, perform adequate quality assurance and quality control." [3] Further, the intervenors assert that, as a matter of law, more must be shown than "merely the adoption of a plan in compliance with Appendix B"; that in addition there must be established "the workability of the plan and the probability that the applicant and the contractor will follow the plan." [4]

In their briefs, the applicant and staff supported the Board's approach. They took the position that only the program was in issue, and that details relating to enforcement were outside the scope of the proceeding.[5] But at the

[2] Initial decision, par. 29.

[3] Saginaw Intervenors' Exceptions, p. 53-24.

[4] *Id.*, p. 53-27 (fn. 15j).

[5] Applicant's Brief, p. 49; Staff's Brief, p. 28.

oral argument before this Board, both the applicant and staff modified this view: they now appear to concede the relevance of such reports, but only as to whether the applicant (including its architect-engineer) is technically qualified.[6]

II

We turn first to the question as to whether it is permissible for a licensing board, in a situation such as is here presented, to limit its inquiry—as the Licensing Board here did—to determining merely whether the applicant has adopted a QA program which, if implemented in accordance with the representations of the application, will satisfy the requirements of Appendix B. We conclude that, in the circumstances of this case, the Board was entitled to do so.

No QA program is self-executing. Thus, irrespective of how comprehensive it may appear on paper, the program will be essentially without value unless it is timely, continuously and properly implemented. This being so, it seems to us to follow that it is not enough for a licensing board to satisfy itself that, *if* implemented, the program described in the PSAR will adequately protect the health and safety of the public. At least where, as here, there has been a legitimate question raised in the course of the proceeding, the board must go on to inquire into whether there is, in fact, a reasonable assurance that the applicant and its architect-engineer *will* carry out the program in accordance with its terms. And, if the inquiry leads it to conclude that the record does not permit an affirmative finding on that score, it then becomes the board's responsibility to take whatever action is required—including possibly the outright denial of the construction permit—to provide some measure of assurance that there will not be an improperly

[6] AB Tr. 88-89, 123-126.

constructed facility which might present safety problems.[7]

The inquiry which the board must make is not necessarily resolved by a determination of whether, in a broad sense, the applicant and its architect-engineer are "technically qualified." A demonstration that technical qualifications do exist does not necessarily provide reasonable assurance that the QA program described in the PSAR will be faithfully fulfilled. To the contrary, as important as qualifications may be, of no less significant is the matter of managerial attitude. Unless there is a willingness—indeed, desire—on the part of the responsible officials to carry it out to the letter, no program is likely to be successful.

Based on these considerations, we hold that the Licensing Board viewed the scope of its QA inquiry, as expressed in paragraph 28 and 29 of the initial decision, too narrowly. In the context of the present proceeding, it was incumbent upon the Board to do more than simply ascertain, as it did, that if the QA program were implemented in accordance with the representations in the application, the requirements of Appendix B would in fact be satisfied. The Board also should have determined whether there was a reasonable assurance that the applicant and its architect-engineer would carry out the terms of the program.

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[7] We recognize, as did the Licensing Board, that, with respect to quality assurance (as well as other aspects of reactor construction and operation), the regulatory staff has on-going enforcement responsibilities to make certain that the permittee or licensee complies with all of the requirements imposed upon it. But this consideration scarcely affects a Licensing Board's duty, *prior* to authorizing a construction permit, to resolve legitimate questions relating to the likelihood that the applicant will fulfill those requirements. The presence of police officers on the highways is, after all, not deemed to justify the issuance of a motor vehicle license to a person who does not offer a reasonable assurance that he both can and will comply with the traffic laws which those officers are charged to enforce.

III

With these principles in mind, we now turn to a consideration of those portions of the record which bear upon the applicant's QA program. To begin with, we have found nothing which would cause us to overturn the Licensing Board's findings as to the consistency of the QA program with the requirements of Appendix B. We have reviewed the QA manuals for both the applicant and its architect-engineer. Both of these manuals, as presently revised, appear to present a satisfactory overall program to meet the quality assurance criteria of Appendix B. Insofar as implementation of the program is concerned, however, a review of the evidence in this case causes us serious concern.

The basis for this concern is illuminated by the contents of the AEC inspection reports in evidence. Compliance inspection of the Midland facility began on January 14, 1970, with a meeting held at the plant and attended by several representatives of the applicant and at least one representative of Bechtel Corp., the architect-engineer.[8] The purpose of the meeting was "to inform the applicant of the purpose, scope, and organization of the forthcoming intensive QA review of the QA program for the Midland project."

An initial QA inspection was made on March 10, 11 and 12, 1970,[9] in which the applicant's QA program itself was discussed and deficiencies then existing to the program described in terms of the various criteria of Appendix B. Some discrepancies were noted which involved Criteria II, IV, VI, IX, X, XI, XII, XIV and XV. A discussion of these discrepancies was held with the applicant's management personnel on April 7, 1970 in order to verify their understanding with regard to the QA program; the report reflect-

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[8] CO Report No. 329 and 330/70-1.

[9] CO Report No. 329 and 330/70-2.

ed that the applicant "indicated intent to resolve each of the deficiencies in a timely manner." [10]

A second inspection was held on May 1, 1970 [11] to "(a) review both CP and Bechtel's plans for site QA/QC activities, (b) determine extent of implementation, (c) review work performance and QC procedures and record keeping practices, and (d) determine the status of excavation efforts." QA programs for the Midland project covering such areas as excavations, foundation preparation, concrete placement and reinforcement steel were reviewed. During the day an inspection was made of the testing laboratory facilities and discussions held on the required QC documentation.

A further inspection was made on June 26, 1970, during which a detailed discussion was undertaken concerning the applicant's QA program. In particular, the discussion centered on the placement of concrete, and the applicant's QA audit involving such matters as air tests, cylinder tests, vibration of concrete, concrete temperature, clump-time, and pour records. The report of this inspection noted that the applicant on May 28, 1970 had requested an exemption under 10 CFR Part 50 to proceed with certain work prior to the granting of a construction permit.[12] The report further reflected Bechtel's intent, if such an exemption should be granted, to have several persons at the site who had expertise in such things as batch plant operations and concrete placement. According to the report, Bechtel stated its onsite personnel would collectively have the necessary qualifications to handle all of the work anticipated under the exemption. Similarly, the applicant stated that its staff "will be adequate to control the work contemplated under the exemption."

[10] CO Report No. 329 and 330/70-3.

[11] CO Report No. 329 and 330/70-4.

[12] CO Report No. 329 and 330/70-5.

The next inspection was made between September 29 and October 1, 1970, during which period work was proceeding under the exemption received by the applicant on July 30, 1970. The report of this inspection noted, *inter alia*, the following examples of nonconformance with the QA program:[13]

1. improper use of vibrators during concrete pours;

2. improper testing of the concrete by the site's testing laboratory;

3. improper sampling of the concrete for slump tests; and finally

4. "the QA and QC inspection personnel present at the concrete pour location did not promptly identify and correct apparent deviations from the ACI-301 Standard regarding consolidation of concrete."

It is apparent from the foregoing that the architect-engineer did not have properly trained construction personnel to handle the vibration of the concrete and that neither he nor the applicant had QA engineers on site sufficiently knowledgeable in concrete work to recognize the deficiencies in the procedures. As reflected in the inspection report, the architect-engineer and applicant once again stated that they expected to have properly trained crews and inspection on site for further operations.

The last inspection prior to shutdown of construction was made on January 7, 1971. At that time, the applicant was questioned about advance planning to "restore the site to full construction status when required." [14] A representative of the applicant stated that this planning was the architect-engineer's responsibility and that "he anticipated that it would include adequate steps to verify the integrity of the

[13] CO Report No. 329 and 330/70-6.

[14] CO Report No. 329 and 330/71-1.

existing structures, etc., before resuming construction." The inspection report states that "the applicant was urged to give consideration to this aspect of the facility shutdown status."

On the basis of the evidence summarized above, we find that neither the applicant nor the architect-engineer has provided reasonable assurance that the QA program will be implemented properly, even though both organizations have experience in building reactors. They have in this project not demonstrated their concern with maintaining QA programs in synchronization with their construction programs, nor have they demonstrated that they will have properly trained people on site to implement the QA program.

We deem it no answer that, as suggested by a staff witness, deficiencies such as the type disclosed here are "typical problems that occur" and "fall into a general category of problems that we do run into continually in our inspection work at Midland and other sites." [15] We would like to think that such failures to adhere to a QA program are not accepted as normal in reactor construction. In any event, the heart of the confidence in engineered safety features lies in the assurance that the quality of construction fully meets all specifications.

Despite the failure of the Board to deal adequately with QA issues, it did not reject any evidence offered on this subject. Moreover, the record not only includes extensive information on the QA aspects of construction but it also shows that the actual structural work which has been performed on the Midland plant appears to be satisfactory.[16]

[15] Tr. 4608-09.

[16] CO Report No. 329 and 330/71-1. This, of course, does not mitigate the seriousness of the deviations from proper quality assurance practices; since the Commission has accepted certain Code requirements as a necessary concomitant of proper quality assurance, the fact that structural deficiencies did not result must be accredited to pure luck or happenstance.

For these reasons, there would be little utility in remanding the case to the Licensing Board for further findings or evidentiary proceedings.

IV

Because of the history of the failure of the applicant and the architect-engineer to observe the required QA practices and procedures, as documented in this record, we have concluded that additional QA conditions must be imposed upon the applicant. These conditions, to which the outstanding construction permits are to be deemed subject, and which are to be considered as a predicate for the permits now to remain in effect, are as follows:

1. By April 9, 1973, or the date of resumption of construction activities (whichever is later), the applicant shall furnish a complete report to this Board, with copies to all other parties to his proceeding, on the quality assurance action being undertaken by the applicant and/or its architect-engineer to assure that the construction work already performed and the materials now on the site are in satisfactory condition. This report, in addition to covering actual construction work and materials, shall also cover inspection and calibration of instrumentation to be used in the QA program.

2. On the date specified in condition 1, *supra*, and on the first day of each calendar quarter thereafter, reports shall be submitted to the regulatory staff on the construction work to be performed during that quarter. Such reports shall contain the names of the QA supervisors and engineers of both the applicant and the architect-engineer who will be on site during the period covered by the report.

3. A statement of the QA qualifications of each individual named in the reports required by conditions 1 and 2

will be supplied in the report in which he or she is first mentioned.

4. A monthly nonconformance report covering the previous month's work will also be forwarded to the staff, with enough detail so that the reasons for the discrepancies, if any, will be apparent. When a discrepancy is discovered too near the end of the reporting period to permit determination of adequate corrective measures by the end of the period, the corrective measures shall be given in the next monthly report.

This Board requests that, for its information, copies of all reports required by conditions 2, 3, and 4, *supra*, be forwarded to it by the staff on a timely basis, together with any comments that the staff may have. This Board would also appreciate receiving staff comments on the report required by condition 1, and these comments should include the results of any staff inspection.

It is the expectation of this Board that the staff will closely monitor the activities of the applicant and architect-engineer with reference to the QA program described in the PSAR, as that program has been or may be amended. To this end, the staff's enforcement responsibilities are in no way limited by the conditions herein prescribed, and the staff is free to take any remedial action over and above these conditions which it may deem necessary.

V

Since we have not completed our consideration of the other exceptions which have been filed, and the other aspects of the initial decision, we express no view on them now. In taking this action, however, we do not wish to be understood as endorsing a practice of piecemeal review of licensing-board actions. Such review usually would be contrary both to views which we have previously expressed,[17] and

[17] *Wisconsin Electric Power Co., et al.* (Point Beach Nuclear Plant, Unit 2), ALAB-87, WASH-1218 (Suppl. 1) 578 (December 22, 1972).

to the spirit of the Commission's Rules of Practice.[18] In normal circumstances we would dispose of all of the issues posed by exceptions and by an initial decision in one opinion. Here, however, we viewed the evidence in the quality assurance area as constituting a special circumstance which warranted an unusual course of action—particularly our view of the possibly imminent resumption of construction and the concomitant importance of assuring adequate QA activities in connection with such construction. Hence, we factored out the single issue with which we have here dealt.

Accordingly, the initial decision, and the construction permits issued as a result thereof, are hereby modified to the extent indicated in this opinion. At a later date this Board will render a further opinion, disposing of the remaining exceptions.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

MARGARET E. DUFLO
Secretary to the Appeal Board

Dated: March 26, 1973

[18] Cf. 10 CFR § 2.730(f).

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

ALAN S. ROSENTHAL, *Chairman*
DR. JOHN H. BUCK, *Member*
WILLIAM C. PARLER, *Member*

In the Matter of
CONSUMERS POWER COMPANY (Midland Plant, Units 1 and 2) — Docket Nos. 50-329, 50-330

MR. HAROLD F. REIS, Washington, D.C., for the applicant, Consumers Power Company.

Messrs. MYRON M. CHERRY and ROBERT GRAHAM, Chicago, Illinois, for the Saginaw Intervenors (Saginaw Valley Nuclear Study Group, *et al.*).

Mr. HAROLD J. VOGEL, Minneapolis, Minn., for the Mapleton Intervenors (Nelson Aeschliman, *et al.*).

Mr. MILTON R. WESSEL, New York, N.Y. (Mr. JAMES N. O'CONNOR, Midland, Mich., with him on the brief), for the Intervenor, Dow Chemical Company.

Mr. DAVID E. KARTALIA, for the AEC Regulatory Staff.

Decision

(ALAB-123)

On December 14, 1972, the Licensing Board issued an initial decision, authorizing the issuance of construction permits to the Consumers Power Company (applicant) for the Midland Plant, Units 1 and 2. Before us are separate sets of exceptions to that decision which were filed by the Mapleton and Saginaw Intervenors, as well as a Motion of the Saginaw Intervenors dated March 28, 1973, seeking to supplement the record on appeal with certain "newly discovered information."

We have heretofore considered and ruled on two of the Saginaw Intervenors' exceptions which we regarded as raising questions which should be decided prior to our resolution of the remaining issues encompassed by the myriad of exceptions filed. In ALAB-101, RAI-73-2 60 (February 20, 1973), we denied the Saginaw Intervenors' exception VI. B, insofar as it sought to disqualify the members of the Licensing Board because of alleged bias or prejudgment. Subsequently, in ALAB-106, RAI-73-3 182 (March 26, 1973), we disposed of the issue which had been raised with respect to quality assurance and quality control in Saginaw Intervenors' exception III. F. We now turn to the remaining issues.

An adequate description of the reactor under consideration, and of the procedural background against which we are responding to various exceptions, appears in ALAB-106, *supra,* and need not be here reiterated. Following our issuance of ALAB-106, the Saginaw Intervenors on March 28, 1973, filed with this Board a Motion and Supplement to their previously filed exceptions, seeking to supplement the record on appeal with "newly discovered information." That information consisted of a letter from the Advisory Committee on Reactor Safeguards (ACRS) to the AEC Chairman dated December 18, 1972, and a responsive letter dated February 3, 1973, both concerning the generic resolution of certain issues relating to the safety of light-water cooled reactors. The applicant and staff opposed the motion on grounds of lack of timeliness and of nonrelevance. While it is not clear exactly when the Saginaw Intervenors became aware, or should have become aware, of the exchange of correspondence, the letters in question are possibly relevant to certain of the Saginaw Intervenors' exceptions. That being so, and since in any event the letters are public records on file in the AEC Public Document Room of which

we may take official notice, we have considered them in reaching the decision we render today.

Based on our review of the entire record and for reasons hereinafter set forth, we find no occasion to alter the result reached in the initial decision. Accordingly, that decision, as modified by ALAB-106, is hereby *affirmed*.

I. Questions Relating to Intervenors' Failure To File Adequate Proposed Findings and Conclusions

Before reaching the merits of any of the specific exceptions which have been filed, we treat a question upon which the Licensing Board focused in its initial decision, and which also is discussed by the applicant in its briefs in opposition to the various exceptions—namely, the failure of either the Mapleton or Saginaw Intervenors to file adequate proposed findings of fact and conclusions of law, and the effect of such failure upon those parties' further participation in the proceeding.

1. As the Licensing Board pointed out, the Saginaw Intervenors participated in the radiological hearing but not in the environmental hearing; the Mapleton Intervenors fully participated in the environmental hearing but played a relatively limited role in the radiological hearing. In response to the Licensing Board's request, each group submitted what purported to be proposed findings of fact and conclusions of law.

The Saginaw Intervenors' submission, dated September 15, 1972, expressly stated with respect to environmental issues, which were considered in the phase of the proceeding in which the Saginaw Intervenors did not participate, that the intervenors had "no conventional findings of fact to set forth." Concerning radiological issues, where they played a significant role in developing the record, those intervenors stated that they "have not • • • chosen to search the record and respond to this proceeding by submitting citations of matters which we believe were proved or disproved."

The Mapleton Intervenors on September 14, 1972, submitted proposed findings and conclusions which covered both radiological and environmental matters but, as the Licensing Board indicated, fell "far short of the specification and detailed required by the Regulations."[1] We note in this regard that there was no record citation whatsoever for any of the 37 proposed factual findings, which in fact were little more than restatements of previously filed contentions.

The failure of both the Saginaw and Mapleton Intervenors to file adequate proposed findings of fact and conclusions of law highlights what we view as an area of concern in the functioning of the adjudicatory process in Commission licensing proceedings—i.e., the role of intervenors. Intervenors frequently enter Commission licensing proceedings, including this one, with broad and far-ranging contentions. They have been afforded, and have utilized, the full range of the Commission's discovery procedures. But, even after obtaining a plethora of information through discovery, they have presented limited direct evidence and have often confined their evidentiary cases to the conduct of cross examination. In this proceeding, they affirmatively failed to file adequate proposed findings and conclusions, even though they were asked by the Licensing Board to do so.[2] Now, after the Licensing Board has issued a decision with which they disagree in many respects, they file exceptions with this Board which challenge, *inter alia*, numerous factual findings of the Licensing Board.

Participation in this manner, in our opinion, subverts the entire adjudicatory process. One of the justifications

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[1] Initial Decision, at p. 10.

[2] "Post Hearing Order," dated June 28, 1972.

for public participation in that process is the additional input which intervenors may contribute to the identification and resolution of relevant issues, and the assistance they may provide an agency in fulfilling its statutory mandates.[3] In short, the right of participation in an administrative proceeding carries with it the obligation of a party to assist in "making the system work" and to aid the agency in discharging the statutory obligations with which it is charged.

Section 2.754 of the Commission's Rules of Practice, 10 CFR § 2.754, gives a party the right to file proposed findings and conclusions, and also provides that a board may require that they be filed. In doing so, the rule recognizes that the filing of proposed findings and conclusions by parties is likely to be of substantial benefit to a licensing board in resolving various questions which are at issue in a proceeding—particularly one such as this which involves complex factual questions and a lengthy record which includes a variety of expressed opinions on the various facets of reactor operation. If nothing else, such proposed findings will assist a board in determining what issues in fact exist between the parties, and what issues are either not actually in dispute or not relevant to the eventual decision which must be rendered.

Recognizing this, the Licensing Board here asked the parties for proposed findings and conclusions.[4] Compliance with this request might well have facilitated the decisional process in this case. For, as the Board noted, the failure of the Saginaw and Mapleton Intervenors adequately to comply with the request greatly complicated its task in

[3] *Office of Communication of the United Church of Christ* v. *F.C.C.*, 359 F. 2d 994, 1005 (D. C. Cir. 1966); see also Ernest Gellhorn, "Public Participation in Administrative Proceedings," 81 Yale Law Journal 359 (January, 1972).

[4] "Post Hearing Order," dated June 28, 1972.

reaching a decision, and "has made it virtually impossible in some instances to know whether particular issues are in fact contested."[5]

2. The Commission's Rules of Practice do not mandate a sanction for failing to file adequate proposed findings and conclusions, but do provide that such failure may be deemed a "default" and that "an order or initial decision may be entered accordingly."[6] In treating the intervenors' failure here as a "default," the Licensing Board opined that it could strike the interventions and treat the proceeding as uncontested.[7] It declined to do so, however, in view of the extensive participation of the intervenors in, and their strong influence on, the conduct of the proceeding. Expressing some reservation over a course of action which would permit intervenors to avoid the burden of preparing proposed findings and at the same time reserve the right to attack the Board's decision once made,[8] the Board nevertheless treated as contested issues of fact those to which the intervenors introduced affirmative evidence or engaged in substantial cross-examination; and, with respect to conclusions of law, it attempted to deal with those quesions which it understood to be raised by the proposed conclusions in the light of earlier contentions of the intervenors. The Board left open for our consideration ("when and if there are exceptions") the question of the effect of the intervenors' failure to file adequate proposed findings and conclusions.

Since we are obliged to review the Board's initial decision in this proceeding whether or not exceptions are filed, we are not inclined to dismiss a party from further partici-

[5] Initial Decision, par. 9, at p. 10, fn. 10.

[6] 10 CFR § 2.754.

[7] Initial Decision, par. 9, at p. 11.

[8] *Cf.* ALAB-101, RAI-73-2 60, at p. 63 (Feb. 20, 1973).

pation as a result of its failure to file proposed findings and conclusions. But that does not mean that we cannot take that failure into consideration in ruling upon exceptions filed by that party. Equity to the various parties to this proceeding requires that we accord the failure to file proposed findings some significance, to avoid the intolerable situation where a party may elect to

> remain mute and await the outcome of an agency's decision and, if it is unfavorable, attack it on the ground of asserted procedural defects not called to the agency's attention when, if in fact they were defects, they would have been correctable • • •[9]

It is no answer that, as the Saginaw Intervenors' counsel pointed out at the oral argument before this Board, the Licensing Board refused to declare the intervenors in default.[10] As we have seen, the Board expressed its displeasure with the default of the intervenors but left it to us to consider an appropriate remedy. Furthermore, the contention of the Saginaw Intervenors that the Licensing Board unduly proscribed their activities and cross-examination and their right to discovery, so that there in fact was "no hearing" on the issues which they believe were significant,[11] is hardly persuasive. Many issues as to which the Saginaw Intervenors took a strong position were the subject of extensive consideration by the Licensing Board. At least as to those issues, the failure to file proposed findings represents a clear default. As to the others, we believe the Licensing Board was entitled to a post-hearing specification of areas in which the intervenors contend that errors were committed.

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[9] *First-Citizens Bank and Trust Co.* v. *Camp*, 409 F. 2d 1086, 1088-9 (4th Cir. 1969). See and compare *Easton Utilities Commission* v. *AEC*, 424 F. 2d 847, 851 (D. C. Cir. 1970).

[10] AB Tr. 10.

[11] AB Tr. 13.

Accordingly, while we do not exclude the intervenors from further participation as a result of their failure to file adequate proposed findings and conclusions, we shall take this failure into account, particularly in assessing the adequacy of the specific factual findings which have been challenged by the intervenors.[12]

II. Description of the Exceptions

The more voluminous of the exceptions filed are those of the Saginaw Intervenors. Covering some 195 pages, those exceptions are divided into 7 major sections: an introduction; separate sections dealing with procedural and substantive matters affecting the radiological portion of the decision (14 and 6 exceptions, respectively); similar separate sections dealing with procedural and substantive matters affecting the environmental portion of the decision (10 and 12 exceptions, respectively); another section dealing with matters affecting the entire initial decision (7 exceptions); and a final section containing one "miscellaneous" exception. The Mapleton Intervenors have filed 12 exceptions, 4 of which relate to the radiological portions of the decision, and the remainder of which concern environmental issues.

There is a significant amount of subject-matter overlap between the two sets of exceptions, and also between the exceptions filed in various categories of the Saginaw Intervenors' exceptions. In the interest of clarity, we have attempted to group the exceptions of both groups of intervenors into the subject-matter categories to which they appear to relate, and to deal with the exceptions on a given subject collectively.

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[12] While this discussion has been in terms of the obligations of intervenors, it goes without saying that other parties have the same obligation to file proposed findings and conclusions.

III. Function of Atomic Safety and Licensing Boards

In considering the substance of the numerous and broad-reaching exceptions which are before us, we first discuss an issue which is directly raised by two of the Saginaw Intervenors' exceptions, and the thrust of which pervades several others. This issue concerns the scope of the review performed by the Licensing Board.

1. The Saginaw Intervenors contend that the Board should have performed an "independent" review of all safety-associated issues (exception II.C.) and of all issues of an environmental nature (exception IV.A), whether or not the issue had been raised by any of the parties. They assert that the "Commission and the Board have an obligation independently to consider" all issues, both safety related and environmental, "whether contested or uncontested." In addition, with regard to environmental issues, the intervenors insist that the National Environmental Policy Act [13] (NEPA) and the *Calvert Cliffs'* decision [14] impose an obligation on an agency to "consider environmental values at each *stage* in the administrative process" and that the agency's sole designee for this purpose is the Licensing Board.[15]

As we understand it, the intervenors would have the Licensing Board perform a complete, *de novo* independent review of a license application—completely disregarding the review already undertaken by the regulatory staff. In this connection, they find error in the Licensing Board's having "failed aggressively to take the initiative with respect to the broad range of environmental values inherent in the proposal for the plant." [16] They conclude that

[13] 42 U.S.C. 4321, *et seq.*

[14] *Calvert Cliffs' Coordinating Committee, Inc.* v. *AEC*, 449 F. 2d 1109 (D.C. Cir. 1971).

[15] Saginaw Intervenors' Exceptions, at p. 55.

[16] *Id.*, at p. 56.

> the agency (and, hence, here the Licensing Board) must take the initiative and do its own analysis *even to the point of doing independent research.*[17]

2. As intervenors themselves acknowledge, their view of the function of a licensing board is at odds with that delineated by the AEC Rules of Practice. The Rules in effect at the time of the hearing provided, with respect to contested proceedings such as this one, that the board will resolve controverted issues as well as decide whether the findings requisite to a license authorization should be made, but that with respect to uncontroverted matters, the board is

> neither required nor expected to duplicate the review already performed by the regulatory staff and the ACRS and they are authorized to rely upon the testimony of the regulatory staff and the applicant, and the conclusions of the ACRS, which have not been controverted by any party.[18]

These provisions *permit* a board to accept certain testimony of the staff and applicant, and conclusions of the ACRS, on uncontested issues; although they do not—as the intervenors contend—*direct* a board to do so.[19] It is clear that the Board here in fact rendered an independent analysis not only of contested issues but also of those aspects of the application which it viewed as "new or unusual,"

[17] *Id.*, at p. 57 (emphasis supplied).

[18] 10 CFR Part 2, Appendix A, III.(g)(1). Similar requirements appear in the currently effective rules. 10 CFR Part 2, Appendix A, V.(f)(1), effective August 28, 1972.

[19] It is interesting to observe in this connection that the Saginaw Intervenors themselves, in their exception II. I., fault the Licensing Board for allegedly *failing* to rely on the ACRS conclusions in noncontroverted safety areas—and thus, by inference, for acting independently. However, as we have seen, the regulations permit but do not require reliance on ACRS conclusions on uncontested matters.

whether or not contested.[20] In doing so, it conformed to the standards imposed by the Rules of Practice.[21]

3. A licensing board in a construction permit proceeding such as this is expected to evaluate independently and resolve the appropriate contentions of the various parties, to assure itself that the regulatory staff's review has been adequate, and to inquire further into areas where it may perceive problems or find a need for elaboration. If it finds itself not satisfied with the adequacy or completeness of the staff review, or of the evidence presented in support of the license application, it may, for example, reject the application, or may require further development of the record to support such application. In that connection, it may issue an order which in effect requires one or more of the parties to perform additional research. But for the Board to duplicate the role of the staff, or for it to perform independent basic research, is inconsistent with its adjudicatory role and beyond the scope of its delegated authority.

The intervenors have not brought to our attention any authority—and we are not independently aware of any—which would require the licensing board or other trier of fact in a construction permit proceeding to extend the scope of review contemplated under Commission regulations. In the environmental area, the *Calvert Cliffs'* decision, which is cited by the intervenors, made it clear that NEPA requires the Commission and other agencies "to *consider* environmental issues just as they consider other matters within their mandates."[22] The court did go on to

[20] Initial Decision, par. 11.

[21] Intervenors concede that the Licensing Board followed these standards, but they challenge the legality of those standards. (Saginaw Intervenors' Exceptions, at pp. 15-16, 58.) While it does not appear that this challenge was advanced below in accordance with the then applicable so-called *Calvert Cliffs doctrine*, we consider it on the merits, *infra* pp. 335-336. [Pp. 194-196 this appendix.]

[22] *Calvert Cliffs' Coordinating Committee, Inc.* v. *AEC, supra*, at p. 1112.

set forth its oft-quoted pronouncement that the Commission could not "simply • • • sit back, like an umpire, and resolve adversary contentions at the hearing • • •."[23] But that observation was prompted by then-existing AEC regulations which, among other things, precluded a board in a construction permit hearing from considering environmental matters unless they were raised as contested issues, even though the same board was permitted to consider radiological safety issues, whether or not contested. Far different regulatory requirements are governing here, which impose no such prohibition on a board's consideration of environmental matters.[24] Under these requirements, the Board in this proceeding considered certain environmental matters on its own initiative. *E.g.*, Tr. 7368-7542, 7556-72.

In sum, *Calvert Cliffs'*, as well as the other cases cited by intervenors, require no independent research by the Board; moreover, they do not require the Board to duplicate the analysis previously performed by the staff. What *Calvert Cliffs'* requires is an "independent review of staff proposals" by the Board,[25] and conclusions independently arrived at on the basis of evidence in the record, including the staff's Final Environmental Statement.[26] The Board

[23] *Id.*, at pp. 1118-19.

[24] 10 CFR Part 50, Appendix D, as revised September 9, 1971 (36 *F.R.* 18071).

[25] *Calvert Cliffs' Coordinating Committee, Inc.*, v. *AEC, supra*, at p. 1118.

[26] *Greene County Planning Board* v. *FPC*, 455 F. 2d 412 (2d Cir. 1972), also cited by intervenors, invalidated FPC procedures which permitted the holding of a final hearing prior to the preparation of any environmental statement by the agency. The court held that the agency's statement must be considered at such a hearing. Here, the agency's final environmental statement was considered. The *Greene County* court specifically sanctioned the procedural requirement of AEC regulations (at p. 422).

performed that review in this case. Exceptions II.C and IV.A. are accordingly rejected.

IV. Limitation of Issues

Several of the exceptions of the Saginaw Intervenors take issue with various rulings of the Licensing Board which precluded them from raising, and presenting evidence and conducting cross-examination concerning, certain specified issues. In this portion of the decision we shall deal with these contentions *seriatim.*[27]

1. In exception II. B., the Saginaw Intervenors challenge the rulings of the Licensing Board which sustained the applicant's objections to answering two interrogatories (numbers 92 and 210) which had been propounded to it by the intervenors.[28] The exception asserts that, by upholding these objections, the Board "ruled that reactor pressure vessel failure and the probability of such failure were not issues in the proceeding" and "prevented the intervenors from raising a valid issue in the proceeding." [29] The intervenors further claim that such ruling foreclosed them "from securing information in order to make any showing of special circumstances." [30]

We disagree. Neither of the interrogatories called for an evaluation of the possibility or probability of pressure vessel failure. Rather, they *assumed* pressure vessel failure and called upon the applicant to describe and analyze potential consequences thereof. Thus, interrogatory 92 sought

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[27] Contentions that the Licensing Board did not permit intervenors to litigate certain ECCS issues are dealt with separately in Part V of this decision, *infra* p. 339. [P. 203 this appendix.]

[28] "First Set of Interrogatories of Certain Intervenors Directed to Consumers Power Co.," dated March 22, 1971.

[29] Saginaw Intervenors' Exceptions, at p. 10.

[30] *Id.*, at p. 11.

an analysis of the consequences of a situation in which a simultaneous loss-of-coolant accident and pressure vessel fracture were hypothesized. Interrogatory 210 was apparently directed to an analysis of the consequences of a situation where multiple failures of independent engineered safeguards were assumed—a situation comparable to that which was the subject of contention in the *Point Beach 2* proceeding which we specifically ruled did not raise the question of the likelihood or probability of a sudden pressure vessel rupture. ALAB-80.[13]

The Licensing Board itself obviously viewed the interrogatories in the context of an analysis of the consequences of rupture, since it sustained objections to each of them on the ground that

> the questions call for *analysis of the consequences* of an accident which if found to be a credible accident would require denial of the construction permit.[32]

The Commission has held that the issue of pressure vessel failure is not automatically to be considered in a licensing proceeding. In its Memorandum and Order in the *Indian Point 2* proceeding,[33] which the intervenors invoke as a basis for their contention that pressure vessel rupture is an appropriate issue for this proceeding, the Commission indicated that the probability of a rupture of the pressure vessel is so low that it becomes an appropriate area of inquiry in a licensing proceeding only upon a showing of "special circumstances." A showing of "special circumstances" requires more than a mere allegation thereof;

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[31] *Wisconsin Electric Power Co., et al.*, ALAB-80, WASH-1218 (Suppl. 1) 544 (Nov. 14, 1972).

[32] "Rulings with respect to objections to interrogatories," dated May 13, 1971, at pp. 1, 2 (emphasis supplied).

[33] *In the Matter of Consolidated Edison Co. of New York* (Indian Point Unit No. 2), Docket No. 50-247, Commission Memorandum and Order dated October 26, 1972.

and a Board is authorized to exclude contentions or challenges "which have no substantial or *prima facie* basis." [34]

Intervenors have made no showing of special circumstances which would warrant the Boad's consideration of the issue of pressure vessel rupture. Moreover, as we have seen, intervenors' interrogatories 92 and 210 were not designed to elicit inforamtion concerning special circumstances; their denial thus could not have the effect of foreclosing intervenors from securing such information. Therefore, intervenors' assertion that they were improperly denied discovery which would enable them to determine whether "special circumstances" exist is patently without merit.

Intervenors exception II. B. is accordingly denied.

2. In exception II. L. the Saginaw Intervenors contend that the Licensing Board "unlawfully" restricted inquiry (by denying the issuance of subpoenas) on the designs of vendors in competition with Babcock & Wilcox, Inc., the vendor of the reactor in this proceeding. They urge that the Commission is ignoring its health and safety responsibilities by (1) granting proprietary protection to certain information furnished by the applicant and vendor, and (2) "refusing to make comparisons between competing nuclear safety systems." They specifically cite the Board's refusal to issue subpoenas for certain Westinghouse information regarding reagent spray systems, and our affirmance of that ruling in ALAB-35.[35]

The views which we expressed in ALAB-35 are dispositive of the issues raised in this exception, and we find nothing in this exception or in the record of this proceeding which would cause us to modify those views. Exception II. L. is accordingly denied.

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[34] *Id.*, at p. 4, fn. 5.

[35] ALAB-35, WASH-1218 241 (Sept. 21, 1971).

3. In exception II. D., the Saginaw Intervenors assert that the Licensing Board denied them due process by restricting their right of cross-examination. They contend that the Board "in effect" adopted a "rule" that had been suggested by the applicant, which precluded the intervenors from conducting cross-examination "unless they make a *prima facie* showing and were prepared to submit direct evidence" on the invalidity of the information to which cross-examination was directed.[36] Intervenors claim that they were thereby deprived of rights guaranteed them by the Administrative Procedure Act and the Commission's Rules of Practice.

The Board adopted no such "rule." Rather it stated:

> The Board has rejected [applicant's counsel's] request to permit no cross-examination until an affirmative case is established on particular points, and the Board was continue to reject [applicant's counsel's] argument if it is advanced. It seems to us better to take each issue as it comes up and to decide in connection with each issue whether it is one in which we think the process can be fruitful.[37]

On this basis, the Licensing Board permitted extensive cross-examination on the 50% halogen release assumption (from TID-14844) used by the staff, to which exception II. D. is addressed. Only when the Board found that no further repetitive cross-examination would be useful did it limit it by requiring some affirmative showing as a basis for the continuation of such cross-examination.

While opportunity for reasonable cross-examination is provided by the Administrative Procedure Act and the Commission's Rules of Practice, there is no right to un-

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[36] Saginaw Intervenors' Exceptions, p. 17.

[37] Tr. 1894.

limited cross-examination. A party is only entitled to conduct "such cross-examination as may be required for a full and true disclosure of the facts."[38] And presiding officers or licensing boards are specifically authorized to "regulate the course of the hearing."[39] As is made clear by the legislative history of the Administrative Procedure Act, presiding officers are called upon

> to make the necessary initial determination whether the cross-examination is pressed to unreasonable lengths by a party or whether it is required for the "full and true disclosure of the facts * * *".[40]

The Licensing Board made that determination with respect, *inter alia*, to the cross-examination on the 50% halogen release assumption. In our opinion, it did not abuse its discretion in that regard. Exception II. D. is accordingly denied.

4. Equally without merit are several exceptions contending in essence that the Licensing Board improperly placed the burden of proof on the intervenors to show the plant should not be built.

a. In exception II. E. the Saginaw Intervenors recite the applicable regulations which require a license applicant to assume the burden of proof to establish his entitlement to a license.[41] The intervenors then refer to the matter of the alleged limitation on cross-examination with which we have just dealt, as well as to several statements of the Licensing

[38] 5 U.S.C. 556(d); 10 CFR § 2.743(a).

[39] 5 U.S.C. 556(c)(5); 10 CFR § 2.718(e). See *International Harvester Co.* v. *Ruckelshaus*, —F. 2d—, slip opinion p. 22 (D. C. Cir. February 10, 1973).

[40] Administrative Procedure Act—Legislative History, S. Doc. 248, 79th Cong., 2d Sess., at p. 271.

[41] 10 CFR § 10.732.

Board which purportedly reflect a "shift [of] the initial burden of challenge to Intervenors."[42]

Specifically, intervenors quote Dr. Hall as stating that they "have to convince" the Board that "it [the reactor] is improper."[43] But they fail to perceive that, in context, Dr. Hall was merely stating the obvious proposition that each party to the proceeding had the responsibility, if it were to prevail, of convincing the Board of the merit of its contentions.

Similarly, the intervenors refer to what they characterize as a Board "ruling * * * that the Regulatory Staff's submissions are *prima facie* reasonable unless rebutted by intervenors."[44] However, the Board's statement was made in the course of a discussion of whether, and with what quantum of proof, an intervenor could "challenge the whole development of AEC regulations and standards as applied to reactors * * * assumptions which were adopted in 1962 and have been under process of evolution in the period since then."[45] In this limited context, the statement was proper.

The exception is denied.

b. The Saginaw Intervenors also allege an improper shift in the burden of proof in the Board's consideration of environmental issues. Their exception IV. E. states that the Board applied an erroneous burden of proof in assuming that, once a need for electricity has been established, NEPA requires a showing of overriding special environmental damage to offset such need. They assert that the

[42] Saginaw Intervenors' Exceptions, p. 19.

[43] Tr. 1048.

[44] Saginaw Intervenors' Exceptions, p. 20. The Board's statement in question appears at Tr. 1893.

[45] Tr. 1890, 1891.

Licensing Board adopted the applicant's conclusions that there was a need for power, "without analyzing the purposes for [which] such assumed electricity would be used;" and, then, required a special showing of environmental damage to outweigh the benefits to be derived from meeting such need. As a result, they contend, the Board engaged in an unlawful weighing of factors in favor of the development of nuclear energy.

To support this exception, the intervenors quote three sentences from the initial decision. But the sentences are taken out of context and, in our opinion, do not support the proposition for which they are cited.

In its environmental review and balancing, the Board identified and discussed both benefits and costs and finally concluded that the "benefits outweigh the costs." It was in this context of its discussion of the extensive evidence on this record purporting to establish a need for the facility that the Board made its statement that "special environmental damage" must be shown to outweigh the evidence of need shown on this particular record. Similarly, the Board's statement that there is no way in which the loss of flora and fauna "in a site of this kind" can outweigh the benefits of supplying the need was the result of its balance of the loss of flora and fauna from a vacant lot in an industrial area against the benefits of meeting the need for electricity, as indicated by evidence of record.

Finally, the Board's statement that a judgment has been made in the Atomic Energy Act that atomic energy "must" be used for production of electricity was made in the context of a discussion evaluating the environmental effects of low-level radioactive discharges, and the claim that plants should not be licensed until all of those effects are ascertained. In that context, we believe that the statement should be interpreted to mean that the Commission must exercise its licensing authority if all applicable requirements which are prerequisites to the exercise of that au-

thority (environmental as well as radiological) have been satisfied.[46]

In context, there is nothing in these statements which represents a lack of regard for environmental values. Indeed, they represent only one aspect of the Board's evaluation and balancing of environmental considerations. To be sure, the intervenors may question the balance reached by the Board, but we see nothing to indicate that the Board applied an incorrect burden of proof as to environmental issues. And as will be seen later, the Board correctly declined to evaluate the particular uses that would be made of the electricity produced, although it did find that the postulated demand would be made up of normal industrial and residential use.[47] Accordingly, exception IV.E. is denied.[48]

V. ECCS Issues

The exceptions of both the Saginaw and Mapleton Intervenors raise questions concerning the reactor emergency core cooling system (ECCS). In general, these exceptions fall into two general types: those challenging the validity of the Commission's ECCS Criteria,[49] and those challenging the conformance of the Midland ECCS to those Criteria.[50]

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[46] Viewed in this manner, the statement negates the contentions made in Saginaw Intervenors' exception VI. C.

[47] See Part XI. 3.a of this decision, *infra.* p. 351. [P. 236 this appendix.]

[48] The burden-of-proof question has also been raised in Exception III. E, as part of a discussion of the Board's handling of the synergism issue. We will deal with all aspects of the synergism issue in Part VIII of this decision, *infra,* pp. 344-345. [Pp. 216-220 this appendix.]

[49] Saginaw Intervenors' exceptions II. J. and III. A., and Mapleton Intervenors' exception 4.

[50] Saginaw Intervenors' exception III. B.

We have already held that a licensing board may not entertain an attack upon the Interim Acceptance Criteria. The only question that may be litigated in an individual licensing proceeding is whether the ECCS of the reactor in issue conforms to those Criteria.[51]

As for the conformance of the Midland ECCS to the Interim Criteria, the Saginaw Intervenors, in exception III. B., contend that the applicant "has not submitted evidence in order to meet Criteria Nos. 3 and 4 of the Interim Acceptance Criteria." They reason that our prior ruling in ALAB-46, *supra,* requires only that an applicant demonstrate conformance to the appropriate evaluation model; that this ruling is in error; and that a computation pursuant to the evaluation models does not necessarily demonstrate compliance with these Criteria.

Since, as the Licensing Board explicitly found, the intervenors did not contest below the compliance of the proposed reactor with the Interim Criteria,[52] there is no necessity for us to entertain these assertion. In any event, we note that the identical assertions were recently made and rejected by us in the *Indian Point 2* proceeding.[53] We adhere to the reasons there assigned for that rejection.

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[51] *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-57, WASH-1218 435 (June 20, 1972); *Wisconsin Electric Power Co., et al.* (Point Beach Nuclear Plant, Unit 2), ALAB-78, WASH-1218 (Suppl. 1) 517, 523-24 (November 10, 1972); *Boston Edison Co.* (Pilgrim Nuclear Power Station), ALAB-83, WASH-1218 (Suppl. 1) 552 (December 4, 1972). See also *Consolidated Edison Co.* (Indian Point Unit No. 2), ALAB-46, WASH-1218 293 (March 10, 1972); *Baltimore Gas & Electric Co.,* Docket Nos. 50-317 and 50-318, Commission Memorandum and Order dated September 13, 1972, at p. 3.

[52] Initial Decision, par. 40.

[53] *Consolidated Edison Co.* (Indian Point Unit No. 2), ALAB-95, RAI-73-1 33 (January 18, 1973).

VI. Limitation of Intervenors' Discovery

Certain of the exceptions filed by both groups of intervenors challenge the extent of discovery which the intervenors were accorded under various rulings of the Licensing Board and, on one occasion, by one of our decisions.[54]

1. Exception II. A. of the Saginaw Intervenors questions the Licensing Board's rulings disallowing certain interrogatories addressed by the intervenors to the staff and the Commission's Advisory Committee on Reactor Safeguards (ACRS). Exception II. N. has a somewhat similar thrust, questioning the rulings of the Licensing Board as well as our own ruling (ALAB-33)[55] disallowing certain of the intervenors' document requests. Since both of these exceptions bear to some extent upon the appropriate role of the ACRS in a proceeding such as this, we will also take this opportunity to consider two other exceptions (II. H. and I.) pertaining to the reports of the ACRS on the Midland reactors.

a. Section 182b of the Atomic Energy Act, 42 U.S.C. 2232(b), directs the ACRS to review each construction permit or operating license application, and to submit a report thereon "which shall be made part of the record of the application and available to the public" (with limited exceptions not here relevant). The ACRS letter is only admitted as part of the record to show compliance with statutory requirements and not for the truth of any of the statements therein.[56] However, the AEC Rules of Practice

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[54] The alleged limitations which we here discuss are those occasioned by the nature of the information requested or the identity of the person or persons from whom such information was sought, and do not include those arising as a result of the exclusion of issues which the intervenors sought to inject into this proceeding. For a discussion of some of these issues, see Parts IV and V of this decision, *supra.*

[55] ALAB-33, WASH-1218 225 (September 3, 1971).

[56] *Wisconsin Electric Power Co.* (Point Beach Nuclear Plant,

provide that in uncontested cases, and in contested cases with respect to issues which are not controverted by any party a licensing board may rely on the "conclusions of the ACRS." [57]

b. In exception II. A. the Saginaw Intervenors claim they were denied "due process" by the failure of the Licensing Board to require the Regulatory Staff or the ACRS to answer interrogatories directed to both radiological and environmental issues.

The Licensing Board in fact directed the staff to answer many interrogatories but sustained objections to others, principally on the ground of undue burden.[58] The Board also noted that many of the interrogatoies directed at the staff were not propounded to seek facts but, rather, to inquire into the thought processes of the staff and its rationale for reaching certain decisions. Thus, the Board stated:

> It is perhaps not an exaggeration to say that complete answers to these interrogatories would require the staff to prepare a justification, intelligible to laymen, of the whole history of the development of pressurized water reactors * * * [59]

Moreover, in rejecting interrogatories on environmental matters, the Board took into account that many of those

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Unit 2), ALAB-78, WASH-1218 (Suppl. 1) 517, 527 (November 10, 1972); *Arkansas Power and Light Co.* (Arkansas Nuclear One, Unit 2), ALAB-94, RAI-73-1 25 (January 18, 1973).

[57] 10 CFR Part 2, Appendix A, III(g) (regulations in effect prior to August 28, 1972); similar requirements now appear in Part 2, Appendix A, V(f)(1) and (2).

[58] ASLB telegrams of May 13 and May 27, 1971, and "Rulings on Interrogatories Addressed to the AEC Staff," dated June 1, 1971. See also Tr. 1879.

[59] June 1, 1971 "Rulings," at pp. 2-3.

interrogatories were simply resubmissions of interrogatories previously disallowed, and that the intervenors had failed to show why the earlier rulings no longer prevailed.[60]

Under 10 CFR § 2.718, the Board has broad discretionary authority to confine discovery within reasonable limits. Absent an abuse of discretion affecting substantial rights of a party, a board's rulings will not be disturbed.[61] We find no such abuse of discretion here.

c. The major emphasis in exception II. A. is upon the Licensing Board's denial of all interrogatories directed to the ACRS. We have previously stressed, in holding that an ACRS report could not be admitted into evidence for the truth of the matters stated therein, that the "persons responsible for the report (the members of the ACRS) are not subject to being examined by the parties or the Board" with reference to the contents of the report.[62] That being so, the denial of all of the intervenors' interrogatories directed to the ACRS was plainly correct.[63]

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[60] "Order With Respect to Various Motions Filed in this Proceeding," dated December 22, 1971, p. 16.

[61] *Cf. Bell* v. *Swift & Co.*, 283 F. 2d 407, 409 (5th Cir. 1960).

[62] *Arkansas Power and Light Co.* (Arkansas Nuclear One Unit 2), ALAB-94, *supra*, at p. 32, citing a Commission order of January 26, 1972 in the ECCS rulemaking proceeding, Docket No. RM-50-1.

[63] Exception II. H. of the Saginaw Intervenors represents another view of the same issue. It challenges the admission into evidence of the report and letter of the ACRS without according the intervenors an opportunity to question the truth, validity or authenticity of the statements made therein. Since the documents were not admitted for the truth of the matters stated therein but "for the sole purpose of showing compliance with the statute" (Initial Decision, par. 1, fn. 2; Tr. 1881-2, 1895), the manner in which the ACRS arrived at the views which it expressed is irrelevant here. Discovery thereon is not required. Moreover, the instances which intervenors cite as showing substantive reliance by the Licensing Board on ACRS statements are misplaced; they either do not mention or

2. Exception II. N. raises a similar question regarding the propriety of the Licensing Board's denial of document discovery against the ACRS. For reasons indicated above, such discovery is not available under existing Commission procedures. The Licensing Board committed no error.

Exception II. N. also objects to our ruling in ALAB-33[64] concerning the discovery of privileged documents. Since no valid reason for us to change that ruling has been set forth, we decline to do so.

VII. Suitability of the Midland Site

Several of the Saginaw Intervenors' exceptions relate to the suitability of the Midland plant site for its intended use, both from a safety and an environmental standpoint. In our opinion, none of these exceptions is meritorious.

1. Exception III. D. asserts that there is no basis in the record for the Licensing Board's finding that the requirements of 10 CFR Part 100 have been satisfied. The intervenors advance two independent bases for this contention.

First, they insist that Part 100 incorporates, as a guide, T.I.D. 14844;[65] that if an applicant does not wish to follow T.I.D. 14844, it must demonstrate the applicability of alternative criteria; and that the applicant and staff, in asserting that the Midland application satisfied the requirements of Part 100, relied on Safety Guide 4 rather than T.I.D.

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concern the ACRS, or reflect the Licensing Board's ruling limiting its reliance upon the ACRS report to establishing that the statutory directions appearing in Section 182b, of the Atomic Energy Act had been satisfied. In our view, the Licensing Board did not assign any independent probative value to any statements in the ACRS report.

[64] ALAB-33, WASH-1218 225 (September 3, 1971).

[65] "Calculation of Distance Factors for Power and Test Reactor Sites," dated March 23, 1962.

14844 without providing an adequate justification. Intervenors add that had T.I.D. 14844 been used, the Midland site would have been found "unacceptable."[66]

Secondly, the intervenors contend that the Licensing Board's judgment as to site acceptability was conditioned on its finding that the emergency plans met the requirements of 10 CFR Part 50, Appendix E; and that the evidence of record provides "no support" for such a finding. Intervenors argue that the Board was required not only to determine that an adequate plan existed but also that it was workable; and that, absent such a determination, the Licensing Board had no basis for concluding that the Midland site was suitable.

a. Turning first to the question of the general criteria which the applicant has utilized to establish its compliance with 10 CFR Part 100 ("Reactor Site Criteria"), the intervenors appear to read Part 100 as a completely frozen statement of exact procedures to be followed for the evaluation of reactor sites. On the theory that the procedural methods and site calculations developed in T.I.D. 14844 have been incorporated by reference into Part 100, they reason that the record must at least adequately demonstrate a valid reason for deviating from those procedures and calculations. Finding such a deviation in the applicant's and staff's admitted reliance on Safety Guide 4—which, among other things, sanctions a Board's consideration for site evaluation purposes of engineered safeguards such as emergency core cooling systems—the intervenors assert that the record fails to demonstrate the reliability of engineered safeguards and hence fails to provide an adequate basis for the Board to rely on Safety Guide 4.

This argument ignores 10 CFR § 100.10, which in describing various factors which the Commission will take into account in evaluating site acceptability, specifically

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[66] Saginaw Intervenors' Exceptions, p. 53-12.

sanctions the consideration of, *inter alia*, "safety features that are to be engineered into the facility." 10 CFR § 100.10(a)(4). It also ignores the actual content of Safety Guide 4. It is true that Part 100 provides (in a footnote) that T.I.D. 14844 *may* be used for guidance and that the calculations in that document *may* be used as a point of departure for consideration of particular site requirements. But the basic requirements of paragraphs 1a, 1b and 1c of Safety Guide 4 (which intervenors claim has been improperly substituted for T.I.D. 14844) are essentially the same as those in T.I.D. 14844. Paragraph I d of Safety Guide 4 merely permits the applicant to take credit for the reduction in the amount of radioactive material available for leakage due to containment sprays, filter systems and other engineered safety features—a provision clearly consistent with 10 CFR § 100.10(a). Paragraph 1e of Safety Guide 4 is slightly different from assumption 4 of T.I.D. 14844, in that the rate of leakage from the containment is reduced after 24 hours because of the decrease in pressure in the containment; but, again, this provision is consistent with 10 CFR § 100.10(a).

Not only is it consistent with Part 100 for a board to take account of engineered safeguards such as an emergency core cooling system, but there is also no requirement that there be a demonstration on the record of the effectiveness of such a system—assuming, of course, that applicable criteria have been established and that the system complies with such criteria. If an ECCS meets such criteria, "the Commission has judged it to be acceptable." [67] The Licensing Board found conformance of the Midland ECCS with applicable criteria,[68] and we have earlier (Part V, *supra*) rejected the Saginaw Intervenors' exception on

[67] *Consolidated Edison Co.* (Indian Point No. 2), ALAB-46, WASH-1218 293, 302 (March 10, 1972).

[68] Initial Decision, par. 40.

that issue. Accordingly, it was appropriate for the Licensing Board to take into account the emergency core cooling system in its determination that the plant conformed to the requirements of Part 100.

Intervenors also object to what they describe as one of the assumptions of both T.I.D. 14844 and Safety Guide 4—that the fission product release contemplated by those documents is conservative only if the ECCS is "almost or 100% effective." They contend that

> [o]nly pursuant to such an assumption can one say that an abitrary release of fission products less than the total fission inventory of the core is conservative.[69]

This contention derives no support from the record, which clearly shows (Tr. 1867-8) that the amount of radioactive releases from the core used in T.I.D. 14844 calculations assumes essentially 100% meltdown of the core. It is only under conditions of complete failure of the ECCS that such a complete meltdown might possibly occur. The fission-release values are therefore conservative even under partial operation of the ECCS. While the intervenors disagree with this, they did not produce any contrary evidence in spite of an invitation by the Board for them to do so. (Tr. 1890-93). Accordingly, we find no reason to find fault with the Board's utilization of the guidelines of Safety Guide 4 in its determination regarding conformance to Part 100, or to upset its findings regarding site suitability under Part 100 which are premised upon the criteria of Safety Guide 4.[70]

[69] Saginaw Intervenors' Exceptions, p. 53-15.

[70] Intervenors further claim in this regard that the Licensing Board was uninterested in the whole concept of the safety of the people in the Midland community. Neither the pages of the transcript quoted by the intervenors (Tr. 1679-1887 and Tr. 1610-1667) nor any other part of the record discloses any indication of any such disinterest by the Board.

b. The second aspect of intervenors' challenge to the Part 100 findings evolves from the Board's acceptance of the applicant's proposed emergency evacuation plan. The Board considered the evaluation plan not only from the standpoint of whether it satisfied the requirements of 10 CFR Part 10, Appendix E ("Emergency Plans for Production and Utilization Facilities") but also as an element in satisfying the requirements of Part 100. Thus, it found that the residential population within the low population zone is "well within acceptable limits," as defined by Part 100; but that the transient population within such zone—primarily employees of Dow—is "unusually large" and acceptable under Part 100 only on the assumption of an effective evacuation plan.[71]

With respect to the plan itself, the Licensing Board noted that it had given particular consideration to the evacuation procedures of Dow. The Board had found a plan which had been initially proposed, and which had been developed prior to the promulgation of Appendix E to be "inadequate," and had required the applicant to submit a revised plan. The Board ruled that the revised plan conforms to the requirements of Appendix E.[72]

In making its determination regarding conformance of the plan with both Appendix E and Part 100, the Licensing Board interpreted the regulations as requiring only a discussion of preliminary plans "sufficient * * * to assure the compatibility of proposed emergency plans" with the plant location, and not "specific proposals." [73] Specifically discounting the testimony of a witness of Saginaw Intervenors, the Board found that "timely evacuation is reasonably assured."[74]

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[71] Initial Decision, par. 16.

[72] *Id.*, par. 33.

[73] *Id.*, par. 32.

[74] *Id.*, par. 33.

The Saginaw Intervenors question the legal test adopted by the Licensing Board in this regard; they claim that the Board was required to investigate and make findings regarding the workability of the plan. Their argument is somewhat analogous to that which they made—and which we accepted—with regard to the quality assurance (QA) plan under consideration in this proceeding. See ALAB-106.[75] But QA plans and emergency evacuation plans are not at all comparable and the respective regulatory requirements differ substantially. We held in ALAB-106 that at least in certain situations a licensing board at the construction permit stage must look into the workability of QA plans; those plans are used during the plant's construction and are a vital component of the Commission's safety program applicable to such construction. In contrast, emergency evacuation plans play no such role during construction, and the requirements of Appendix E recognize that fact.[76]

In their challenge to the Board's findings concerning the emergency plan, the intervenors cite both Sections II and IV of Appendix E as the sources of the rules applicable in this proceeding. Our review of the initial decision convinces us that the Board correctly applied the criteria of Section II, which govern plans at the construction permit stage; and that it was not required to apply the criteria of Section IV, which deal with the content of plans to be submitted at the operating-license stage in the Final Safety Analysis Report.

Intervenors also claim that the Board erroneously disregarded testimony of the witness that it was impossible to evacuate either the low population zone or the City of Midland in the time required by the regulations. The regulations required a showing of the possibility of evacuation

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[75] RAI-73-3 182 (March 26, 1973).

[76] 10 CFR Part 50, Appendix E, Sections II, III and IV.

only from the low population zone,[77] and only one outlying area of the City of Midland (primarily occupied by Dow) falls within that zone. There is ample evidence of record which indicates that evacuation of the low population zone within the requisite time period is feasible.[78] Accordingly, there was warrant for the Board's findings on this subject.

2. Mapleton Intervenors' exception 2 is directed to the Board's finding that the residential population in the low population zone is "within acceptable limits."[79] These intervenors claim that this finding was made without any reference either to the criteria aplied to determine what limits are acceptable, or to the justification for those criteria.

We note first that Mapleton Intervenors failed to raise below an issue concerning the residential population of the low population zone and hence should not be permitted to raise it before us. On the merits, however, it is obvious from the initial decision that the Licensing Board, as it was required to do, evaluated the residential population of the low population zone in accordance with the criteria in 10 CFR § 100.3(b). Moreover, the record adequately supports the acceptability of the low population zone.[80] This exception is denied.

3. Saginaw Intervenors' contention IV.J. asserts that, in the environmental phase of the initial decision, the

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[77] 10 CFR § 100.3.

[78] See, e.g., Tr. 2604-15, 2664-83, 3096-3266, 3282, 3286-7, 3397-3400. Intervenors assert that their witness testified that it would take "at least four hours to evacuate Dow." Exceptions p. 53-19. In fact, their witness testified not that it would take "at least four hours" to evacuate Dow but, rather, that he estimated "that it would take two-and-a-half to four hours." (Tr. 4775).

[79] Initial Decision, par. 16. See further discussion *supra,* p. 342. [P. 212 this appendix.]

[80] See, *e.g.,* Tr. 1674, 3295, 3339-40, 3371-72, 3398-3400.

Board should have analyzed the adequacy of Part 100 and of Appendix E to Part 50. The intervenors base this contention on the "peculiar circumstances of the site" which, they contend, require an analysis from an environmental standpoint of whether "mere compliance with those regulations was sufficient."[81]

The Board applied the criteria of Part 100 and of Appendix E only in the context of its health and safety responsibilities. It independently evaluated the environmental aspects of the plant, taking into account the particular site characteristics, as well as applicable Commission guidelines. Thus, various accidents were individually analyzed, in the manner outlined in the September 1, 1971 letter of the AEC Director of Regulation to applicants,[82] and the potential releases of such accidents and the probabilities of their occurrence evaluated in making a judgment as to their environmental effect.[83]

Intervenors specifically refer to the lack of cost-benefit analysis of an individual's exposure to a 300 rem dose to the thyroid, as the result of an accident. Footnote 2 to 10 CFR 100.11, which is addressed to the 25 rem whole-body dose to a person situated at the boundary of the *exclusion* area, expressly states that "[h]owever neither [the use of the 25 rem] value nor that of the 300 rem value for thyroid exposure as set forth in these site criteria guides are intended to imply that these numbers constitute acceptable limits for emergency doses to the public under accident conditions." We emphasize again that 10 CFR Part 100 is to be used for the evaluation of proposed sites

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[81] Saginaw Intervenors' Exceptions, p. 96a.

[82] "Scope of Applicant's Environmental Reports with Respect to • • • Accidents," dated September 1, 1971. Use of this document has been explicitly sanctioned. See 36 *F.R.* 22851 (December 1, 1971).

[83] Initial Decision, pars. 67, 74.

and not to set individual limits of exposure to radioactivity.

Apart from these considerations, the Board did in fact deal with the environmental aspects of the hypothetical accidents contemplated by Part 100, finding the possibility of such an accident to be "vanishingly small" and "their environmental risk • • • extremely low." [84]

Accordingly, this exception is without merit.[85]

VIII. Synergism

One of the major contested issues in this proceeding is the claimed "synergistic" interaction of releases of radioactivity with chemicals released from the Dow plant. The Saginaw and Mapleton intervenors each asserted, with respect both to the radiological and environmental aspects of the proceeding, that the combination of radioactive and chemical effluents would produce a synergistic effect which is greater than the sum of the separate effects. The Saginaw Intervenors through discovery obtained from Dow a list of effluents expected to be discharged from the Dow facility in 1975, the year the Midland plant was originally scheduled to begin operation.[86] Nevertheless, they produced no evidence in support of their contentions respecting synergism. The Mapleton Intervenors, however, presented three witnesses on this subject.

[84] Initial Decision, pars. 67, 74.

[85] Saginaw Intervenors' Exception IV.F. makes a somewhat similar contention applicable to safety regulations generally, asserting that the Board relied on such regulations but failed to undertake a cost-benefit analysis for each one of them. As in the case of Part 100 and of Part 50, Appendix E, which we have heretofore discussed, the Board applied various safety criteria only in the context of its health and safety responsibilities. It independently evaluated the environmental aspects of the plant, taking into account its predicted environmental effect. For example, with respect to permissible radiation releases (to which intervenors specifically refer), the Board analyzed the environmental impact of releases, on the assumption that they will meet the "as low as practicable" criteria which will be set up by Part 50, Appendix I, when it is finally approved. Such review conforms to the mandates of NEPA. Exception IV. F. must also, therefore, be denied.

The Licensing Board found that, standing alone, the intervenors' evidence failed to establish "that, at the levels of concentration involved here, there will be any interaction which would tend to increase radiation effects from the Plant, or the chemical effects from Dow." [87] Considered in light of the evidence presented by the applicant and staff, the Board found the evidence against a finding of "synergism" to be "overwhelming."

a. In exception III. E., the Saginaw Intervenors begin their discussion of the synergism issue by stating that this issue was considered only as a result of the effort of the intervenors; but that despite those efforts, the Licensing Board failed to treat it adequately. They concede that the Board started an inquiry on synergism but claim that it "never really followed through." [88]

The record does not support this claim. The technical members of the Board, in particular, on several occasions directed a number of penetrating questions respecting synergism to the staff (*e.g.*, Tr. 7557), the applicant (*e.g.*, Tr. 8905) and the intervenors (*e.g.*, Tr. 8266-267, 8469, 8514-15). In this regard, the Board adequately carried out a licensing board's responsibilities. See pp. 12—17, *supra*.

b. The apparent thrust of exception III.E. is that the evidence (presented by the Mapleton Intervenors) on synergism was sufficient to constitute a *prima facie* showing

[86] Initial Decision, par. 65.

[87] Initial Decision, par. 66.

[88] Saginaw Intervenors' Exceptions, p. 53-22.

of the "invalidity" of the standards imposed by Parts 20 and 100 of the Commission's regulations. Accordingly, so the intervenors argue, the Licensing Board should have certified the question of the validity of these regulations to this Board or, at least, "'sufficiently analyzed its implications." [89]

Certification to us would have been required, under procedures then in effect, only if the Licensing Board concluded that "there is a substantial question presented on the record as to the validity of a challenged regulation." [90] From our review of the initial decision, we perceive no such conclusion on the part of the Licensing Board, particularly as applied to the evidence on synergism. To the contrary, the Board specifically found the intervenors' evidence to be nonpersuasive. We see no reason to upset that finding.

c. The final point on synergism made by the Saginaw Intervenors is that the burden of proof on this issue was "misplaced;" and that the Board required the intervenors to "demonstrate there was a problem of synergism rather than, as is required by the Rules, having Applicant and the Regulatory Staff demonstrate that there is no problem with synergism." [91] Here intervenors misinterpret the requirements of the rules.

The ultimate burden of proof on the question of whether the permit or license should be issued is, of course, upon the applicant. But where, as here, one of the other parties contends that, for a specific reason (in this instance alleged synergism) the permit or license should be denied, that

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[89] *Id.*, p. 53-23.

[90] *In the Matter of Baltimore Gas and Electric Co.* (Calvert Cliffs Nuclear Power Plant, Units 1 and 2), Docket Nos. 50-317, 50-318, Commission Memorandum dated August 8, 1969, at p. 4.

[91] Saginaw Intervenors' Exceptions, p. 53-23.

party has the *burden of going forward* with evidence to buttress that contention. Once he has introduced sufficient evidence to establish a *prima facie* case, the burden then shifts to the applicant who, as part of his overall burden of proof, must provide a sufficient rebuttal to satisfy the Board that it should reject the contention as a basis for denial of the permit or license. In this case, the Licensing Board determined not only that the intervenors had failed to make a *prima facie* showing of synergistic effects, but also that the applicant's evidence affirmatively established that synergism would not occur.

d. It is unfortunate that, in connection with an issue as contested and as novel as the synergism issue, the Licensing Board's ruling was as cursory as that appearing in paragraphs 64-66 of the initial decision. While the Board did state that, when one considers the testimony of the applicant and staff, the evidence against a finding of "synergism" was "overwhelming," the decision deals specifically only with the inadequacies of the intervenors' testimony. It neglects to include any specific reference to the persuasive evidence on synergism presented by the applicant and staff. The applicant presented three witnesses on this subject (Drs. John H. Rust, Merrill Eisenbud, and G. Hoyt Whipple), including an extensive paper by Dr. Rust (Tr. 8873-8900). The staff presented testimony by Dr. Norman A. Frigerio. These witnesses were subjected to extensive cross-examination (Tr. 8909-8944).

The testimony of these witnesses can perhaps best be summarized in the words of Dr. Rust:

> • • • there is no direct or indirect evidence that will lead to the conclusion that the effluent of either the Dow plant or the Midland nuclear power station will interact in any way to make the very minimal ionizing radiation released or the minimal chemical effluents

expected harmful to man, his ecosystem or the biosphere in general, now or in the future."[92]

The conclusion was reached after an extensive analysis of the characteristics and effects of the various effluent releases, and with regard both to somatic effect and genetic damage.

We regard the views expressed by the staff's and applicant's witness as dispositive on the synergism question, and adequate to support the Licensing Board's ultimate findings on this issue. Saginaw Intervenors' exception III. E. is accordingly denied.

e. The Mapleton Intervenors' questioning of the Board's findings regarding synergism is disposed of by our comments in d., *supra*. With respect to those intervenors' challenge to certain exclusionary evidentiary rulings, only that relating to the affidavit of Dr. Charles Huver is sufficiently identified to be considered. Dr. Huver's affidavit was viewed as a challenge to Part 20 and was excluded on the ground that it did not raise a substantial question as to the validity of Part 20.[93] Dr. Huver was not called upon to testify on synergism, and he was not made available for cross-examination. His affidavit was accordingly not entitled to any evidentiary weight. Mapleton Intervenors' exception 9 is accordingly denied.

IX. Analysis of Hypothetical or Design Basis Accidents

The analysis of hypothetical or design basis accidents is an essential part of the Commission's licensing review procedures, both from a safety and an environmental standpoint. Questions in both areas hase been raised in this pro-

[92] Tr. 8896.

[93] Licensing Board's Order dated March 10, 1972.

ceeding. We will first address the safety questions on this subject, and thereafter the environmental questions.

1. In exception III. C. the Saginaw Intervenors contend that the Licensing Board failed to analyze all of the required accidents associated with design and operation of the proposed plant. They claim that the loss-of-coolant accident (LOCA) analyzed by the applicant and staff, and accepted by the Board, is not the "true credible accident," since the analysis was premised "on the effectiveness of engineered safeguards such as emergency core cooling system as well as upon the integrity of the pressure vessel of the primary coolant system."[94] They read such analysis as being inconsistent with the definition of LOCA.[95]

Intervenors misstate the analysis actually undertaken by the applicant and staff. Rather than assuming operation of the ECCS to prevent core meltdown, as intervenors claim, the hypothetical accident analyzed by both the applicant and staff assumed, in accordance with 10 CFR § 100.11(a), footnote 1, a substantial meltdown of the core with subsequent release of appreciable quantities of fission products.[96] The safety analysis assumed that only one-half of the engineered safeguards are available during the accident.[97]

Exception III. C. includes a further claim that accidents occurring in two other circumstances should have been analyzed; a simultaneous maximum hypothetical accident in both Midland reactors, and a maximum hypothetical accident at one reactor together with the largest credible

[94] Saginaw Intervenors' Exceptions, p. 53-7. The pressure vessel integrity issue was also raised in Exception II. B. and has been disposed of in our discussion of that exception (*supra*, pp. 336-337).

[95] 10 CFR Part 50, Appendix A.

[96] Tr. 1946-50, 1867-8.

[97] Tr. 2320.

chemical incident at the Dow facilities. We assume that the intervenors are referring to simultaneous postulated accidents chosen for 10 CFR Part 100 evaluation purposes. Section 100.11(b) provides that site criteria need only be analyzed with respect to a single accident unless an accident in one reactor would initiate an accident in another, or unless an accident in one reactor could affect the safety of the operation of the other reactor. The Midland reactors are not to be interconnected and there is no showing on the record of this proceeding that an accident in one unit would initiate an accident in the other. Similarly, there has been shown no cause and effect relationship between an accident at Midland and one at Dow. In those circumstances, the simultaneous accidents mentioned by the Saginaw Intervenors need not have been considered by the Licensing Board."[98]

Exception III. C. is accordingly denied in its entirety.

2. Saginaw Intervenors' exception V. A. deals with design basis accidents from the point of review of the Commission's environmental responsibilities. In that respect, the regulations in Appendix D to 10 CFR Part 50 (implementing the requirements of NEPA) have been construed to require, at least since their major restructuring in September, 1971, a discussion in environmental impact statements (and concomitantly consideration at any public hearing) of the environmental impact of certain types of nuclear accidents. By letter dated September 1, 1971,[99] the AEC Director of Regulation issued instructions to all license applicants relative to the manner in which accidents were to be discussed in environmental reports. Nine categories of postulated accidents were established, rang-

[98] See also *Wisconsin Electric Power Co.* (Point Beach, Unit 2), ALAB-31, WASH-1218 201 (August 18, 1971).

[99] "Scope of Applicant's Environmental Reports with Respect to • • • Accidents," *supra.*

ing from the most trivial to the most severe. Class 1 accidents do not have to be considered "because of their trivial consequences." At the other extreme, Class 9 accidents also do not have to be considered; while it was recognized that their consequences "could be severe," it was also concluded that "the probability of their occurrence is so small [as a result of such factors as defense in depth (multiple physical barriers), quality assurance, continued surveillance and testing, and conservative design] that their environmental risk is extremely low." Class 8 accidents are equated with the design basis accidents used in Safety Analysis Reports and Safety Evaluations, but the analysis of their consequences was directed to be on the basis of realistic assumptions rather than the highly conservative assumptions appearing in the safety reports and safety evaluations.

The instructions to applicants in the September 1, 1971 letter concerning consideration of accidents were incorporated into proposed regulations in December, 1971.[100] These regulations require environmental reports to include a discussion of accidents, based on the assumption set forth in an annex to Appendix D which, like the September letter and for the same reasons, requires consideration of all accidents other than those in Class 1 and Class 9. The proposed regulations are entitled to be accorded some weight, in view of an expression in the Statement of Considerations of the Commission's expectation

> that the provisions of the proposed amendments will be useful as interim guidance until such time as the Commission takes further action on them.[101]

[100] 36 *F.R.* 22851 (December 1, 1971). In footnote 2 of the proposed annex, the September letter was recognized as "guidance" on this subject which had been made available to the public.

[101] 36 *F.R.* at p. 22851 (December 1, 1971). In August, 1972, after the close of the environmental hearings in this case, the Com-

The proposed annex to Appendix D, although it does not require consideration of Class 1 or Class 9 accidents, does recognize that "other accident assumptions may be more suitable for individual cases." Accordingly it specifies that

> [w]here assumptions are not specified, or where those specified are deemed unsuitable, assumptions as realistic as the state of knowledge permits shall be used, taking into account the specific design and operational characteristics of the plant under consideration.[102]

In similar fashion, with respect to Class 8 accidents, the proposed regulations provide that environmental reports need not take into account those accidents

> for which the applicant can demonstrate that the probability has been reduced and thereby the calculated risk to the environment made equivalent to that which might be hypothesized for a Class 9 event.[103]

3. In exception V. A. the Saginaw Intervenors challenge the Licensing Board's disposition of questions raised concerning a Class 9 accident. The Board indicated that the applicant had furnished information with respect to potential public exposures to radioactivity from postulated accidents; and that the information had been furnished in accordance with the guidance in the September 1, 1971 letter of the Director of Regulation (which, as we have seen, was substantively incorporated into the December 1,

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mission issued for comment a draft "Guide to the Preparation of Environmental Reports for Nuclear Power Plants" which, with respect to accidents, incorporated the text of the December 1, 1971 proposals. In March, 1973, following the initial decision here, this guide was issued in final form, incorporating the same guidance with respect to accidents (38 *F.R.* 8013, March 27, 1973.)

[102] *Id.*, at p. 22852.

[103] *Ibid.*

1971 proposed regulations). The Board found, for purposes of the cost-benefit analysis of an individual reactor, that the chances of a serious accident were "vanishingly small," incalculably small," and thus "insubstantial."[104]

This finding—and the related finding in paragraph 67 of the initial decision—are amply supported by evidence of record.[105] In contending otherwise, the intervenors rely on material not part of the record—indeed, material which did not come into being until after the close of hearings in this proceeding. We can, of course, take official notice of new information, and can order a remand to the Board for the consideration of such information if that course of action were necessary or desirable. But a remand is not necessary here because intervenors have misinterpreted the cited portions of the newly discovered information.

They state that "[f]irst of all, the Atomic Energy Commission has recently retreated from its specious argument that the probability of a Class 9 accident is vanishingly small."[106] We know of no such "retreat" and intervenors give no reference to support their statement.

Intervenors further state that " • • • in the Regulatory Staff's NEPA Statement under date of December 8, 1972, and in connection with the ECCS hearings, the Regulatory Staff now admits that there is no statistical basis for a position that the probability of a Class 9 accident is 'vanishingly small'."[107] But what the staff actually said in the December 8 document was quite different (p. 8):

> The conclusions that accidents in this category are sufficiently low in probability that their impact on the

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[104] Initial Decision, par. 74.

[105] See, *e.g.*, Staff Exh. 6, p. VI-3.

[106] Saginaw Intervenors' Exceptions, p. 100.

[107] *Id.*, pp. 100-101.

environment need not be considered is based on the technical judgment of the AEC staff rather than on statistical methods.

Finally, intervenors quote Safety Report WASH-1250 at page 6-39 [108] as stating "that the probability of a Class 9 accident is ten to the minus three, per year." The actual figure on page 6-39 of this report shows that the (catastrophic failure) or Class 9 accident has a probability of 10^{-6}/yr.

It is on the basis of these three gross misstatements that intervenors conclude that the Licensing Board should have engaged in an independent evaluation of the consequences of a Class 9 accident and that not to do so "is almost criminal negligence." [109] Further, the misstatements underpin their suggestion that the applicant and staff had an obligation to establish on the record the likelihood of a Class 9 accident in view of their "burden of demonstrating the propriety of the proposed [licensing] action." [110]

The regulatory judgments used in the calculation of Class 9 accidents may be accepted as correct by licensing boards absent an affirmative showing that they are not correct. Here, no such showing has been made. That being so, Saginaw Intervenors' exception V.A. is denied.

X. Resolution of Various Safety Items

Saginaw Intervenors' exception II. F. and G., their Motion to Supplement the Record of March 28, 1973, and Mapleton Intervenors' exception 3, all relate to the resolu-

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[108] Properly identified as "Draft—The Safety of Nuclear Power Reactors (light water cooled) and Related Facilities—WASH-1250." (December, 1972).

[109] Saginaw Intervenors' Exceptions, p. 102.

[110] *Id.*, p. 100.

tion of various safety questions, either generically or with specific reference to this facility. They also concern the function and relationship of various organizational components involved in the licensing review process, such as the regulatory staff, the compliance staff, and the ACRS, as well as the Licensing Board. For these reasons, those exceptions will be considered together.

1. In exception II. F., the Saginaw Intervenors contend that the staff has implicitly amended the position which it took in its safety evaluation and supplemental safety evaluation of the Midland reactors—i.e., that the reactors can be operated without undue risk—by certain letters requiring the applicant to submit additional information and perform certain recalculations. The intervenors urge that the staff was aware of the information giving rise to these letters prior to the initial decision; and that, accordingly, such information should have been brought to the attention of the Licensing Board. The intervenors further assert that, since the information was not brought to their attenion, they were deprived of an opportunity to raise issues suggested by that information; and that, in any case, the Licensing Board had an independent obligation to consider such issues whether or not contested.

Specifically, intervenors refer to six letters and one bulletin written by the staff. Letters 1, 2 and 4 (as designated by intervenors) deal with quality assurance items. Letters 3, 5 and 7 concern problems that have arisen in the industry with respect to other reactors; in some cases they request reviews and calculations on the equipment or design of the Midland reactors to assure that they will not be subject to similar difficulties. In this group, letter 5 concerns a topic which has been of concern for operating reactors for several months, *i.e.*, the fuel densification problem. This problem is, of course, of no immediate concern to the Midland reactors but it is something that must be considered before operation. Item 6 is a bulletin which in-

forms the industry of problems some licensees have had with a certain type of "valve operator." In the Midland situation, this would merely serve as a notice to the designers to check on the reliability of the "valve operators" to be used in these reactors.

All of these items are representative of the normal, routine correspondence which is carried on between the staff and various segments of the reactor industry. As such, they are simply examples of the staff's carrying out ongoing regulatory functions with respect to every reactor, functions it uninterruptedly performs from the inception of the licensing process to the final stages of decommissioning. In these circumstances, they cannot be taken as constituting implicit amendments to the staff's safety evaluation report.

The exception also avers, in essence, that intervnors had recently learned that the staff had determined that the Babcock & Wilcox design as reflected in the Midland reactors is unsafe. No source for that averment is given; and in a written response to questions asked at the oral argument before this Board, intervenors stated that they had relief on information that "came into the possession of Mr. Ford from very reliable sources • • •"[111] We see no reason why such a totally unsupported assertion should be given any credence.

Intervenors further complain that the letters and bulletin had not been forwarded to them. But there is no rule that requires the forwarding of documents of this type to an intervenor. The documents were deposited in the Public Document Room, as required; and they were available to intervenors and anyone else. Indeed, intervenors assert that they became aware of the information in this manner.

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[111] Letter dated March 26, 1973, from Myron M. Cherry to the Chairman of the Appeal Board for this proceeding.

In sum, the failure to send the documents to intervenors invaded none of their substantial rights.

The exception is therefore denied.[112]

2. Saginaw Intervenors' exception II. G. asserts that because of "amendments" to the staff's evaluation, the ACRS review was not in accordance with Section 182.b of the Atomic Energy Act.[113] As an illustration of such an "amendment," they point to the approval by the staff of the Interim Acceptance Criteria for the emergency core cooling for Baccock & Wilcox reactors, including Midland.

We do not agree with this analysis. The ACRS reviewed this reactor and reported twice to the Commission before the radiological phase of the hearing.[114] The ACRS also reviewed the Interim ECCS Criteria which were adopted by the Commission in June 1971. When the criteria were first approved, they did not include models for the Babcock & Wilcox or Combustion Engineering reactors. Following the staff's approval of models for these two vendors in December 1971, the ACRS reviewed the new criteria incorporating these models and approved them for use.[115]

The Babcock & Wilcox model to which the Midland reactors must conform is detailed in Part 4 of the Interim Criteria. It is obvious that, having reviewed the application for the Midland reactors previously, and having approved the Interim Criteria for the ECCS of Babcock and Wilcox reactors, there was no need for further ACRS review of the Midland reactors.

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[112] Our discussion in Part III, *supra*, adequately disposes of the intervenors' assertion concerning the Licensing Board's obligation independently to investigate matters such as these.

[113] 42 U.S.C. 2232(b).

[114] Letters from ACRS to the Chairman of the Commission, dated June 18, 1970 and September 23, 1970.

[115] Letter from ACRS to Chairman of the Commission, dated January 7, 1972.

3. The question of the need for further ACRS review is also raised by the Saginaw Intervenors' Motion of March 28, 1973, to incorporate into the record on appeal an exchange of correspondence between theACRS and the Commission relating to ACRS "generic items." By letter of December 18, 1972, the ACRS transimtted a list of generic concerns which it had identified in earlier letters on individual facilities. The December 18 letter listed 25 of the items as being resolved, with the other 22 items remaining unresolved. In its response of February 5, 1973, the Commission manifested its intent to continue to conduct research in order to resolve the other items on a generic basis. It is to be noted that, in its December 18 letter, the ACRS makes it clear that resolution of an item "indicates that the Committee is satisfied in a generic sense;" and that, for unresolved items, the ACRS "will continue to consider [these] items and their significance to safety on a case-by-case basis until generic resolution is reached."

The Saginaw Intervenors focus on the unresolved generic items and assert, in effect, that they must be resolved prior to issuance of any further construction permits. The intervenors, of course, had every reason to be aware of the unresolved items applicable to the Midland reactors prior to the close of hearings here, since they had been reflected in the ACRS letters. That some of them remain unresolved (in the sense of the ACRS letter of December 18, 1972) is not new information which would justify reopening of the record. The only new information is that 25 of these generic items *have* been resolved.

Additionally, the lack of resolution of certain items on a generic basis does not mean that, as applied to the Midland reactors, the particular items have not been satisfactorily dealt with. Such applicable items have been considered in the review of these reactors by the regulatory staff, the ACRS, and the Licensing Board. Accordingly, the

exchange of correspondence in question raises no question as to the validity of any of the Licensing Board's findings.

4. Mapleton Intervenors' exception 3 focuses on the Licensing Board's finding that site meteorology data were incomplete,[116] claiming that construction permits may not issue prior to the completion of the meteorological data and analysis. AEC regulations provide otherwise, and permit certain information to be developed during plant construction.[117] When further meteorological data are required, the AEC makes conservative assumptions as a basis for reaching initial conclusions. The decision below conforms to that standard.[118]

XI. Alleged Deficiencies in Environmental Review

A number of exceptions of both the Saginaw and Mapleton intervenors challenge the environmental review of the Midland facility, in terms of the adequacy of the environmental impact statement, the Board's review of various environmental issues or contentions, and certain procedural rulings of the Board relating to the environmental aspects of the proceeding. In this portion of the decision, we will treat those exceptions of this type with which we have not heretofore dealt.

1. Saginaw Intervenors' exception IV. B. contends that the cost-benefit review performed for this facilitiy is insufficient, because it did not quantify various costs and benefits involved. The intervenors read NEPA and the

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[116] Initial Decision, par. 23.

[117] 10 CFR § 50.35(a)(2) and (4).

[118] The Board found that the staff's meteorological assumptions "are sufficiently conservative to justify a reasonable expectation that the site is satisfactory" (par. 22). The testimony of intervenors' meteorologist tended to corroborate this finding (Tr. 3406-3687).

Calvert Cliffs' decision [119] as mandating a quantification of "cost and benefits in anticipation of an arithmetic weighing." In this exception, however, the intervenors recognize that "some environmental values (or industrial needs) may not be capable of quantification," and that in those instances NEPA "would permit a qualifying analysis." [120] They nevertheless assert that a Board must at least make an effort to quantify and must set forth reasons for not doing so.

The asserted requirement for quantification of environmental costs and benefits derives from Sections 102(2)(A) and (B) of NEPA, 42 U.S.C. 4332(2)(A) and (B), which direct Federal agencies to:

> (A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on man's environment; [and]
>
> (B) identify and develop methods and procedures • • • which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical considerations.

Guidelines of the Council on Environmental Quality incorporate but do not expand upon these statutory directions.[121]

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[119] *Calvert Cliffs' Coordinating Committee* v. *AEC, supra.*

[120] Saginaw Intervenors' Exceptions, pp. 61-62 (fn. 18).

[121] 36 *F.R.* 7724 (April 23, 1971). The requirements are described in somewhat greater detail in the CEQ Memorandum for agency and general counsel liaison on NEPA matters, dated May 16, 1972. On May 2, 1973 (38 *F.R.* 10856) the CEQ issued for comment revised proposed guidelines for the preparation of environmental impact statements which also do not impose any inflexible—or indeed any—requirements relative to the quantification of environmental impacts. Among other things, these proposed guidelines make it clear that, in developing impact statements, agencies should concentrate on the "substance of the information conveyed rather than • • • the particular form, or length, or detail of the statement" (38(b)).

The *Calvert Cliffs'* court read the requirements of Sections 102(2)(A) and (B) of NEPA as contemplating a "rather finely tuned and 'systematic' balancing analysis in each instance." [122] It did not require quantification in all instances. And other courts have made it clear that quantification is not an absolute, and that in some situations it is neither possible nor necessary. *City of New York* v. *United States,* 344 F.Supp. 929, 939 (E.D.N.Y. 1972) (three-judge court). In the words of one court:

> The Court is not here stating that an environmental impact statement • • • would be inadequate simply because the defendants and the Council on Environmental Quality had not identified and developed the methods and procedures to quantify such values. The NEPA does not require the impossible.[123]

It is clear in this case that both the staff, in its Final Environmental Statement, and the Board, in its decision, have balanced the costs of the proposed plant against its benefits. In doing so, the Board found that it was "not possible" to quantify all costs and benefits, and to reach an arithmetical balance, since "more often than not the quantifications are so speculative and non-objective as to be worse than useless." [124] The Board then applied its rationale to particular aspects of the environmental re-

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[122] 449 F. 2d at p. 1113.

[123] *EDF* v. *Corps of Engineers,* 325 F. Supp. 749, 758 (E.D. Ark. 1971), affd. —— F. 2d ——, 4 ERC 1721 (8th Cir. 1972).

[124] Initial Decision, par. 45.

view. For example, it found serious difficulties with intervenors' attempts to quantify the value of flora and fauna to be disturbed by construction, concluding that their "method of evaluation and calculation [is] wholly insupportable." [125] But it considered these non-quantifiable factors in reaching its final conclusion that the "benefits outweigh the costs." [126]

Intervenors have pointed to nothing which would indicate that costs which were considered only qualitatively could have been adequately quantified, or which would indicate that the Licensing Board did not take the nonquantifiable factors into account. Accordingly, exception IV.B. is rejected.[127]

2. For the same reasons, Saginaw Intervenors' exception V.H. (as it relates to decomissioning) must also be rejected. That exception finds error in the Licensing Board's failure to quantify the cost and environmental effect of decommissioning of the facility, and the storage of long-lived radioactive waste products.

In paragraph 68 of the initial decision, the Board noted that neither the applicant nor its contractor had any experience with decommissioning, and that the AEC's experience in this regard was not with a plant of the proposed size. It found, however, that decommissioning is possible and that the environmental effects of the most likely method of decommissioning (given today's technology) do not appear substantial, "except for the loss of use of a few acres of land occupied by sealed buildings." It

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[125] *Id.*, par. 52.

[126] *Id.*, par. 70.

[127] The intervenors have seemingly abandoned their position advanced before the Licensing Board that it is possible to quantify the effects of the destruction of birds and animals such as sparrows and mice.

also estimated the cost of decommissioning, although it admitted that the estimates were "quite speculative." [128]

There is substantial, uncontroverted evidence of record to support these findings.[129] Moreover, it is clear that they were factored into both the Board's cost-benefit analysis, and its consideration of alternatives. We do not read NEPA or the Commission's regulations as mandating a quantification of an environmental effect which is found to be insubstantial. The Board's qualitative analysis was sufficient.

Intervenors' claim that there must be a quantification of the environmental costs of storage of long-lived radioactive waste products is part and parcel of their assertions relative to the Board's consideration of the environmental effects of the uranium fuel cycle; it will be discussed in the portion of this decision dealing with that subject (*infra*, p. 354). [P. 241 of this appendix.]

3. Saginaw Intervenors' exceptions IV.C., IV.G., V.B., V.C., V.D. and V.E. are somewhat related. They contend, in effect, that the Licensing Board should have considered environmental effects associated with the various uses to which the electricity and process steam produced by the plant will be used. These include the environmental effect of selling or not selling process steam to Dow (IV.C.); the effects of increasing or decreasing industrial use (IV. C); the alternative of not constructing the plant at all (IV.G.); the alternatives of finding other sources of electricity, or embarking on a program to conserve electricity V. B. D.); the environmental propriety of the proposed uses of electricity (V.C.); and the alleged artificial stimulation by advertising of the demand for electricity (V.E.).

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[128] Initial Decision, par. 68.

[129] See, *e.g.*, Final Environmental Statement (Staff Exh. 6), p. IX-1; Tr. 7820 *et seq.*

a. Most of these effects and alternatives were in fact considered by the Board. Thus, the environmental (as well as safety) consequences of the location of the plant in close proximity to a large chemical plant were factored into the Board's decision.[130] The alternative of not building the plant at all is inherently part of the cost-benefit analysis which was carried out by the Board.[131] The applicant's ability to obtain electricity from other sources was the subject of extensive testimony,[132] which fully supports the Board's finding that "outside sources are unavailable."[133]

Some of intervenors' contentions in these exceptions seek to expand the NEPA review well beyond the pale of what we view as required by NEPA. Thus, while the scope of NEPA consideration of alternatives clearly extends beyond those which an agency itself may effectuate (see *Natural Resources Defense Council* v. *Morton*, 458 F.2d 827 (D.C. Cir. 1972)), a rule of reason nevertheless applies. *Id.* at 837. Contrary to intervenors' view,[134] and giving effect to that rule, the Board was not required to analyze the use to which Consumers' customers might put the power generated by the Midland plant to ascertain whether that use would have an adverse environmental impact. The Board made a finding that the "postulated demand is made up of normal industrial and residential use" and that it need not inquire into the propriety of such customary uses of electricity. We agree.[135]

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[130] Initial Decision, pars. 12, 14, 16, 46, 54, 55, 56, 57, 64-66, 76. In part VIII of this decision, *infra*, we have supplemented the Board's findings regarding "synergism," as appearing in paragraphs 64-66 of the Initial Decision.

[131] Initial Decision, pars. 45-49, 70-75.

[132] *E.g.*, Tr. 8070-1, 8076-8.

[133] Initial Decision, par. 70.

[134] Saginaw Intervenors' Exceptions, p. 73.

[135] A proposed Commission guide for the preparation of environmental reports, dated August 1972, included a statement which possibly could be construed as requiring consideration of "externalities"—the end uses of electricity. When the report was issued in final form in March, 1973, it was revised to indicate that only the analysis of certain environmental costs associated with the operation of the plant itself, and not costs associated with the uses of electricity, were contemplated. See U.S.A.E.C. Regulatory Guide 4.2, "Preparation of Environmental Reports for Nuclear Power Plants," Section 8.2 (March 1973).

Mapleton Intervenors' exception 8 must also be rejected for the same reasons.

b. As for the contention that the demand for electricity was artificially stimulated by the applicant's advertising, the Board stated that no evidence had been offered to support that contention; and that absent some evidence that applicant was creating abnormal demand, it [the Board] would not consider the question. We do not believe the Board acted unreasonably.

4. In exception IV. D. the Saginaw Intervenors claim that the Licensing Board scheduled the hearing sessions on environmental matters "in such a way as to preclude participation by [Saginaw] Intervenors and their counsel;" and, by so doing, denied such interventors "their due process right to participate in the environmental hearing."

Intervenors stress that the Licensing Board had refused to consider issues they attempted to raise concerning the validity of the ECCS Interim Criteria for the reason that the rulemaking proceeding on those criteria was still in progress. Intervenors further note that, at the same time, the Board denied their April 15, 1972 motion for an indefinite postponement of the Midland environmental hearing, which motion had been based upon their counsel's participation in that rulemaking proceeding. The impression intervenors seek to convey is that their counsel was required to be present at the ECCS proceeding during the

entire period of the scheduled environmental hearing and that, therefore, the Licensing Board was obligated to defer indefinitely the latter. In the totality of circumstances, however, the denial of the indefinite postponement was scarcely an abuse of discretion.

Long before the filing of the motion for postponement, intervenors' counsel had been put on notice by the Board's order of January 6, 1972, that he must make adequate preparation to handle his commitments. Moreover, the notice of hearing for the ECCS proceeding made it clear that the scheduling of licensing proceedings was not to be delayed because of the lack of completion of the rulemaking proceeding.[136] Nevertheless, the Saginaw Intervenors demanded an indefinite adjournment and offered no alternative dates when they were prepared to participate in the environmental hearing.[137]

As indicated in the initial decision, the environmental hearings began on May 17, 1972 and ended on June 15, 1972, after fourteen days of hearings.[138] The record discloses that the hearings in fact took place on the following days: May 17, 18, 19, 22, 23, 24, 25, 30, 31, June 11, 12, 13, 14, 15. An examination of the record of the ECCS proceeding indicates that those hearings were in recess on seven of those days, that the CNI (whom Saginaw Intervenors' counsel represented in the ECCS proceedings) was represented by another counsel on an additional three of the overlapping days, and that the Saginaw Intervenors' counsel participated in the ECCS proceedings on only four of the days when the two proceedings overlapped. Thus on ten out of fourteen of the overlapping days, the Saginaw Intervenors' counsel participated in neither the Midland nor the ECCS proceedings.

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[136] 37 *F.R.* 288, 289 (January 8, 1972).

[137] See Tr. 5253.

[138] Initial Decision, par. 8.

The scheduling of regulatory proceedings is governed by a number of considerations, only one of which is the convenience of counsel. The Licensing Board has broad discretion in this respect. While it undoubtedly should attempt to accommodate legitimate requests for postponement, it is not required to accede to blanket requests for indefinite postponement which are not accompanied by a good-faith attempt to define a mutually convenient schedule. In any event, counsel who participate in AEC proceedings have an obligation not to over-extend their commitments so as to frustrate the objective of bringing licensing proceedings to a conclusion within a reasonable time frame.

5. In exception IV. I. the Saginaw Intervenors challenge the adequacy of the Final Environmental Statement, and of the Licensing Board's review of that statement, on the basis that the statement failed to include a discussion of reliable scientific fact and opinion which is contrary to the position taken by the agency, and the Licensing Board failed to correct such alleged deficiencies. The intervenors list 8 areas as representative of those "in which there is contrary scientific fact and opinion;" and which are omitted from the impact statement:

a. adequacy and effectiveness of the ECCS

b. reactor pressure vessel failure

c. adequacy of certain valves

d. adequacy of analysis dealing with fuel densification

e. reliability of generation of electricity from nuclear plants

f. genetic effects from cumulative exposure to radiation

g. nature and character of unresolved safety issues, as discussed in "each ACRS letter ever written"

h. adverse effects associated with production of products of Dow Chemical Co.

Citing authority to the effect that "NEPA is, at the least, a law requiring full disclosure," the intervenors find error in the asserted omission of scientific opinion in those areas from the environmental review of this facility.

The only authority cited by intervenors which is possibly relevant to this exception is *Committee for Nuclear Responsibility* v. *Seaborg*, 463F. 2d 783 (D.C. Cir. 1971), where the court ruled that the environmental impact statement for the "Cannikin" nuclear test should set forth "opposing scientific views" and should not completely omit "any reference whatever to the existence of responsible scientific opinions concerning possible adverse environmental effects." The court emphasized that an agency had some discretion in this respect, and that only "*responsible* views need be included." 463 F.2d at p. 787.

This *Cannikin* decision involved questions quite different, and readily distinguishable, from those presented here. At issue there was an agency's preparation of an impact statement for a governmental activity which was not subject to a prior adjudicatory hearing. On the other hand, in an AEC licensing proceeding, the Commission's regulations provide that a party who believes the environmental impact statement is deficient will have the opportunity to present proof in support of his position at the public hearing. The intervenors had that chance here. Interestingly, the *Cannikin* court which found the statement deficient only required that the plaintiffs be given an opportunity to make their submissions on the point discussed in the opinion—no greater relief than what was in fact afforded to intervenors here.

From our understanding of the items covered by this exception, it appears that a variety of views on these

items have indeed been analyzed in this proceeding, or else have been properly regarded as outside its scope. Furthermore, the Saginaw Intervenors could have participated in the environmental hearings and could have sought to bring the opposing views which they wished to sponsor to the fore, but they chose not to do so.[139] Moreover, the impact statement, as well as the initial decision, discusses a broad variety of environmental subjects and views, encompassing the areas in which the intervenors find deficiencies. Not all of the views considered are favorable to nuclear plants in all respects. In the totality of circumstances, this exception must be denied.

6. In exception V. F. the Saginaw Intervenors assert that the Board should have considered issues concerning the environmental effects of the uranium fuel cycle. As they recognize, such consideration is precluded by our earlier ruling in this case in ALAB-60,[140] to which we adhere. See also ALAB-99.[141]

The same issues are raised by the second part of exception V.H. which asserts error in the Board's failure to quantify (or even to consider) the environmental effects of the storage of long-lived radioactive waste products. This matter is similarly governed by ALAB-60 and ALAB-99.

7. Both the Saginaw and Mapleton intervenors except from the Licensing Board's resolution of issues concerning the environmental effects of fogging and icing

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[139] The Mapleton Intervenors presented testimony by Dr. Sternglass in the area covered by item f. (i.e., a challenge to 10 CFR Part 20), but the Licensing Board declined to adopt Dr. Sternglass' views. *Cf. Trustees of Columbia University in the City of New York*, ALAB-50, WASH-1218 320, 336-349 (May 18, 1972).

[140] ALAB-60, WASH-1218 (Suppl. 1) 459 (July 19, 1972).

[141] *Long Island Lighting Co.* (Shoreham Nuclear Power Station), ALAB-99, RAI-73-2 53 (February 1, 1973).

associated with the cooling pond. In paragraph 69 of the initial decision, the Licensing Board rejected the Mapleton intervenors' evidence on this subject, finding that it did not support the contention that there would be substantial fogging and icing in the area around the cooling pond (including Mapleton). The Board found the likely effect on Mapleton to be "negligible" and, even in the area close to the pond, as "insubstantial and the environmental costs minimal." The Board also found, however, that further studies of the effects of cooling ponds were needed.

The Saginaw Intervenors, in exception V. I., and the Mapleton Intervenors, in exception 10, challenge the apparent inconsistency between the finding of a need for further study of cooling ponds and that concerning the minimal or negligible effects of such ponds. There is substantial evidence of record, offered by the applicant and the staff, supporting these latter conclusions. But relative to the need for further study, a staff witness testified that the report prepared by the applicant on this subject was the first systematic study of steam fog from a cooling pond that attempted to relate data to atmospheric conditions for the purpose of prediction of fog formation. He also testified that he disagreed with many aspects of the report.[142] The staff witness indicated, however, that the study was conservative, and that it probably over-predicted rather than under-predicted the fog and icing effects of the cooling pond.[143]

The Final Environmental Statement recommended that the applicant develop an ecological surveillance and monitoring program "which will document the impact of the plant operations upon the ecology of the site and environs."[144] The Board quite understandably stated that

[142] Tr. 7441-2.

[143] Tr. 7445, 7461-2.

[144] Final Environmental Statement, Summary and Conclusion,

the applicant should include in its surveillance program a study of the duration, intensity and extent of fog and icing in the surrounding area. That statement is entirely consistent with the Board's findings, which are supported by the record, that the environmental effect from fogging and icing seems likely to be negligible or insubstantial.

8. Saginaw Intervenors' exceptions V.J. and V.K. assert that, in its environmental review, the Licensing Board failed to take into account and quantify the "unreliability of nuclear power plants as evidenced by the [Commission's] reactor operating reports," and the "effect, if any, • • • on the economic operation of the Midland plant if current Government subsidies of uranium fuel are eliminated or if current resources of uranium are depleted" during the plant's useful life.

Before the Licensing Board, the Saginaw Intervenors raised the question of the economics and reliability of nuclear power plant generation.[145] However, they offered no evidence on this question. In their exceptions, they ask us to take "official notice" of the (1) various "unresolved problems associated with nuclear power," (2) the purported failure of the nuclear industry to have resolved quality assurance and quality control matters; (3) all Reactor Operating Reports; and (4) the "current difficulties surrounding the construction of the breeder."

The record, however, includes specific information concerning the reliability of nuclear power, which indicates that the reliability of nuclear plants and fossil plants are roughly equivalent.[146] Absent any contrary evidence, there

item 7(d). The applicant has agreed to follow this recommendation. (Initial Decision, par. 78.)

[145] Statement of Environmental Contentions, dated February 6, 1972.

[146] Final Environmental Statement, p. XII-6; Tr. 8085, 8086. See also ALAB-106, *supra*.

was no reason for the Board to factor differing reliability estimates into its evaluation of nuclear and other plants as alternatives. As for the alleged effects of the withdrawal of government subsidies of uranium fuel, or the depletion of uranium supplies, the only evidence of record on this subject indicated that the purported subsidies do not exist,[147] and that uranium would continue to be available over the life of the plant.[148]

Given this state of the record, we find no error in the Licensing Board's disposition of these matters.

9. In their exception V.L. the Saginaw Intervenors question the continuing validity of the Commission's regulations in 10 CFR § 50.35, which permit issuance of a construction permit prior to the resolution of certain isues or the gathering of certain data, subject to certain conditions. The intervenors contend that NEPA invalidates this procedure, and requires that both the safety and environmental judgments with respect to the facility be made on the basis of a "completely designed facility."

This provision of AEC regulations is, of course, an integral part of the Commission's two-step licensing procedure. That procedure, as intervenors recognize, was explicitly sanctioned by the Supreme Court in *PRDC* v. *International Union of Electrical, Radio and Machine Workers, AFL-CIO*, 367 U.S. 396 (1961).[149] That decision, which involved the Commission's safety regulations, approved a regimen where a construction permit could be issued even though final design of all components of a reactor had not been completed, and even though information necessary to

[147] Tr. 7034-38, 7924-37.

[148] See, *e.g.*, FES, p. XII-5; Tr. 6588-92; 7920.

[149] Contrary to intervenors' apparent belief (see exceptions, p. 125, fn. 32) we do not read *PRDC* as being premised on any requirement for a mandatory hearing at the operating license stage.

be considered prior to operation of the reactor had not yet been compiled. One necessary predicate for such issuance, however, is findings by the Commission that such further technical or design information as might be required to complete the safety analysis, and which could reasonably be left for later consideration, would be supplied prior to reactor operation. Additionally, it must be found that safety features or components which require research and development have been described by the appplicant and that the applicant has identified, *and there will be conducted,* a research and development program reasonably designed to resolve any safety questions associated with such features or components.[150]

When an applicant receives a construction permit predicated upon such findings, it proceeds at its own risk. Prior to operation, the applicant must satisfy all safety requirements; and if additional research performed or data acquired during construction indicates that any safety requirement cannot be satisfied, the operating license must be denied or appropriately conditioned. As *PRDC* indicates, this is so regardless of the amount of money which an applicant may have expended during construction.

The same conditions govern the Commission's environmental review. At the construction permit stage, a licensing board is required to undertake a thorough analysis of the projected environmental effect of the reactor. Where additional information is needed, a board may permit the development of such information during construction. Nevertheless, with regard to aspects of plant operation which may have an environmental impact—*e.g.*, effluent releases which are governed by proposed Appendix 1 to 10 CFR Part 50—the plant must meet AEC regulatory standards prior to operation.

[150] See 10 CFR § 50.35(a).

NEPA did not overturn the *PRDC* decision, either expressly or by implication. As one court has stressed, it would be "wholly impracticable to require that the ultimate environmental design * * * be included in the EIS. * * * An undertaking of such magnitude is beyond the scope of § 102(2)(C)." [151] Thus, in requiring the preparation of environmental impact statements, NEPA requires a thorough analysis of such information as can reasonably be obtained —and no more. As with safety matters, where further information is needed, it must be obtained prior to issuance of an operating license, so that applicable environmental standards will be satisfied.[152]

The regulations of the Commission are consistent with this view. Exception V. L. is accordingly denied.

10. The Mapleton Intervenors, in their exceptions 5, 6 and 7, take issue on a generalized basis with all of the Licensing Board's enviromental findings and conclusions. The only particular contentions which we can isolate from the broad generalities asserted are those challenging the findings in paragraph 73 of the initial decision (issues which we have dealt with in Part IV. 4.b, *supra*); those challenging the Board's cost-benefit balancing (see Parts IV.4.b and XI. 1, *supra*); and those challenging the Board's treatment of the environmental effects of major accidents (see Part IX, *supra*) and low-level radiation releases (see Part IV. 4.b, *supra*). These exceptions are denied for the same reasons that we rejected comparable assertions made by the Saginaw Intervenors.

11. In exception 11, the Mapleton Intervenors except to the Board's asserted refusal to consider evidence pur-

[151] *EDF v. Corps. of Engineers,* 348 F. Supp. 916, 938-39 (N.D. Miss. 1972).

[152] § 185, Atomic Energy Act, 42 U.S.C. 2235; *Cf. Arkansas Power and Light Co.* (Arkansas Nuclear One Unit 2), ALAB-94, RAI-73-1 25, 30 (January 18, 1973).

portedly offered by those intervenors on "the hazards of Electro-Magnetic Pulse (EMP)." The exceptions do not identify the subject matter or content of the evidence offered, or the occasion when the alleged offer of proof was turned down. Lacking any particularity whatever, this exception must be denied. See 10 CFR § 2.762(a).[153]

XII. Water Quality Requirements

In its NEPA balancing, the Licensing Board considered the contemplated thermal discharges from this plant.[154] Relying on studies conducted by the Michigan Water Resources Commission, the Michigan Department of Natural Resources, and Dow Chemical Co., the Board found the Tittabawassee River to be of "depressed quality." It further found, however, that the Michigan Water Resources Commission was implementing a program to upgrade the river; that there will be "some destruction" of aquatic life although, in view of the present quality of the river, the amount was conjectural; but that even after improvement of the river, "the aquatic life destroyed should not be significant." [155]

The Board required the applicant to conduct a thorough ecological study prior to plant operation to establish base line values, and noted that the applicant "has committed itself to discharges that are significantly lower than those permitted by the standards for thermal releases and total

[153] At one point in the proceeding, the Mapleton Intervenors indicated that they wished to offer testimony on "the effect of a lack of electromagnetic capability on the environment should the plant be built." (Tr. 2685). The Board expressed the belief that this issue was "outside the scope of the issues in this proceeding" (Tr. 2688) but gave the intervenors the opportunity to submit an offer-of-proof in writing (Tr. 2690). The intervenors failed to take advantage of that invitation.

[154] Initial Decision, par. 62-63, 77.

[155] *Id.*, par. 63.

dissolved solids." In the latter connection, the record indicates that the applicant has committed itself to a cooling system designed to "limit the temperature of the pond discharge [into the river] to approximately 1°F above the ambient temperature of the river;"[156] and that State standards currently would permit a rise of 5°F above ambient temperature.

Under NEPA, the Board's handling of the thermal issue was appropriate, and the balance struck was reasonable. However, on October 18, 1972—after the close of evidentiary hearings but prior to the initial decision—the Federal Pollution Control Act Amendments of 1972 (P.L. 92-500, 86 Stat. 816, hereinafter FWPCA) became law. The FWPCA, as recognized by the Commission's Interim Policy Statement,[157] is applicable to licensing proceedings such as this, where no final Commission action had been taken prior to October 18, 1972.

Our recent *Hanford* decision discussed the impact of the FWPCA on proceedings such as this one.[158] The FWPCA may affect the Commission's NEPA responsibilities in the area of water quality. The Commission's NEPA responsibilities will be modified as various implementing actions are taken under the FWPCA by the Environmental Protection Agency and the State. The Policy Statement harmonizes the AEC's licensing responsibilities under NEPA with the requirements of the FWPCA to assure that, until various FWPCA implementing actions are taken, the Commission will continue to carry out its NEPA functions in full.

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[156] FES, p. III-8.

[157] "Interim Policy Statement on Implementation of Section 511 of the FWPCA" (Policy Statement), 38 *F.R.* 2679, January 29, 1973.

[158] *Washington Public Power Supply System* (Hanford No. 2 Nuclear Power Plant), ALAB-113 (April 12, 1973).

On February 28, 1973, the State of Michigan's Water Resources Commission certified that with respect to the Midland Nuclear Plant, "pursuant to Section 401 of the FWPCA, as amended, • • • there is not an applicable effluent limitation or other limitation under Sections 301(b) and 302 of the FWPCA • • • and there is not an applicable standard under Sections 306 and 307 thereof."[159]

The applicant (through its counsel at the oral argument before this Board) committed itself to adhere to whatever standards might be imposed by the FWPCA.[160] Moreover, the applicant will be required, without any implementing action on AEC's part, to comply with applicable limitations or other requirements promulgated or imposed pursuant to the FWPCA.

In these circumstances, we are justified in determining that the Midland facilities will comply with the applicable limitations or other requirements of the FWPCA.

While State law would apparently permit a variation in ambient temperature of up to 5°F, the applicant has agreed with the State of Michigan to meet a 1°F limitation. This agreement is between the State of Michigan and the applicant and is not a result of any condition imposed in this proceeding. The Licensing Board performed its NEPA balance in the water quality area on the basis of the agreed-to limitation. The Board has carried out its NEPA func-

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[159] The Section 401 certification is in addition to the certification received by the applicant on March 12, 1971, under Section 21(b), the section of the FWPCA which prescribed the certification requirements prior to its October 1972 amendments. We need not rely on that certification in this proceeding because of the February 28, 1973, Section 401 certification. We note that the Environmental Protection Agency has also conducted the review of Michigan's water quality standards (in effect prior to the October 1972 amendments to the FWPCA), as provided by Section 303(a)(1) and (a)(2) of the FWPCA.

[160] AB Tr. 110, 147-8.

tions in the water quality area in full so that there is no gap in the environmental review in that area.[161]

XIII. Remaining Exceptions

We have carefully considered all of intervenors' other exceptions and find them without merit. With respect to the Saginaw Intervenors' claim [162] that certain of the Licensing Board's findings and conclusions were not accompanied by a sufficiently detailed articulation of their basis, we have previously described the standard of specificity mandated by the applicable statutory and regulatory requirements as one which "requires communication of what has been decided and such findings as will permit the parties, the public, and a reviewing court to ascertain the agency's reasoning in reaching its decision." [163] We are satisfied that the initial decision meets that standard.[164] None of the remaining exceptions warrants any discussion at all.

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[161] Saginaw Intervenors' exception V.G. contends that the Licensing Board failed to do an independent cost-benefit analysis of the State of Michigan water quality standards. Authorities cited by the intervenors do not support this assertion. Section 511 of the FWPCA does not impose on Federal licensing agencies any such NEPA responsibility regarding water quality matters.

[162] Exceptions II. K., II. M. and IV. H.

[163] *Vermont Yankee Nuclear Power Corporation* (Vermont Yankee Nuclear Power Station, ALAB-73, WASH-1218 (Suppl. 1) 495, 497 (October 11, 1972). See also *Boston Edison Co.* (Pilgrim Nuclear Power Station), ALAB-83, WASH-1218 (Suppl 1) 552, 569 (December 4, 1972); *Trustees of Columbia University in the City of New York,* ALAB-62, WASH-1218 (Suppl. 1) 464, 465 (July 28, 1972).

[164] Moreover, intervenors' failure to file adequate proposed findings and conclusions gives a hollow ring to their claim that the Licensing Board should have gone into greater detail.

XIV. Conclusion

For the reasons stated above, the authorization of the issuance of construction permits to the Midland facility was correct. Accordingly, subject to the modification directed in ALAB-106, the initial decision of the Licensing Board is *affirmed.*

It is so ORDERED.

For the Atomic Safety and Licensing Appeal Board

Margaret E. Du Flo
Secretary to the Appeal Board

Dated: May 18, 1973

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

CLI-73-28

COMMISSIONERS:
DIXY LEE RAY, *Chairman*
CLARENCE E. LARSON
WILLIAM O. DOUB
WILLIAM E. KRIEGSMAN
WILLIAM A. ANDERS

In the Matter of
NIAGARA MOHAWK POWER CORPORATION Docket No. 50-410
(Nine Mile Point, Unit No. 2)

Memorandum and Order

By prehearing conference orders dated January 26, 1973, and April 12, 1973, in the subject proceeding, the Atomic Safety and Licensing Board, *inter alia*, denied intervenors' request to adduce evidence concerning alleged energy conservation alternatives under the National Environmental Policy Act. Pursuant to this Commission's inherent supervisory power over its own proceedings, we have chosen to review that aspect of those orders.[1]

This matter arises at a time of deep national concern over energy sources and supply—a concern which this Commission fully shares. In view of our responsibilities under the National Environmental Policy Act, we cannot agree that the subject of energy conservation must be altogether ruled out of licensing proceedings. It is true that the parameters of our statutory power to compel conservation are not clear. But it does not follow that all evidence should therefore be barred at the threshold. See *Long Island Lighting Co.*

[1] The matter was brought to our attention by virtue of a brief filed in *Ecology Action, et al.* v. *AEC*, No. 73-1857, U. S. Court of Appeals for the Second Circuit.

(Shoreham), ALAB-156, decided October 26, 1973, RAI-73-10, pp. 831-857; *Consumers Power Co.* (Midland), ALAB-123, May 18, 1973, RAI-73-5, p. 352.

Accordingly, insofar as the above prehearing conference orders preclude the presentation of evidence on energy conservation, they are hereby reversed and set aside. The Licensing Board is directed to schedule a prehearing conference on the contentions regarding energy conservation alternatives earlier framed by intervenors. At that conference, intervenors will identify their witnesses who will address these alternatives, specifying the substance of the testimony to be offered. In addition, the Board will fix a schedule for the presentation of this evidence.

It is so ORDERED.

By the Commission.

PAUL C. BENDER
Secretary of the Commission

Dated at Germantown, Md.
this 6th day of November, 1973.

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

ALAN S. ROSENTHAL, *Chairman*
DR. JOHN H. BUCK, *Member*
WILLIAM C. PARLER, *Member*

In the Matter of
CONSUMERS POWER COMPANY (Midland Plant, Units 1 and 2) — Docket Nos. 50-329, 50-330

Memorandum and Order

November 26, 1973

(ALAB-160)

Saginaw Intervenors have filed what they choose to characterize as a motion "to clarify" ALAB-123, RAI-73-5 331 (May 18, 1973). The motion is based upon the November 6, 1973 memorandum and order of the Commission in *Niagara Mohawk Power Corporation,* (Nine Mile Point, Unit No. 2), Docket No. 50-410, RAI-73-11 995. In that memorandum and order, the Commission reversed certain prehearing conference orders of a licensing board insofar as they precluded the presentation of evidence on energy conservation. The proceeding was remanded to that board with appropriate directions.

Despite the label appended to it, the Saginaw Intervenor's motion appears in actuality to assert a conflict between ALAB-123 and the *Nine Mile Point 2* memorandum and order. In a real sense, the relief which the Saginaw Intervenors seek is a remand of *Midland* to the Licensing Board "for further proceedings to consider questions of energy conservation" (Motion, p. 22).

ALAB-123 was rendered more than six months ago. It affirmed, with a limited exception not here relevant, the initial decision of the Licensing Board.[1] In the circumstances, we think it at best doubtful whether we now are empowered to entertain what is essentially a new attack by the Saginaw Intervenors upon the initial decision. Be that as it may, since the motion is based exclusively upon a recent ruling of the Commission, it seems to us that the Commission itself is the body which should decide whether the sought reopening of the *Midland* proceeding is warranted. This is especially so since, in its *Nine Mile Point 2* memorandum and order, the Commission made specific reference to ALAB-123 (as well as to our more recent decision in *Long Island Lighting Co.* (Shoreham Nuclear Power Station), ALAB-156, RAI-73-10 831 (October 26, 1973).

Accordingly, the motion is referred to the Commission for such disposition as it may deem appropriate.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

MARGARET E. DUFLO
Secretary to the Appeal Board

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[1] The only issues left open by ALAB-123 related to quality assurance matters. Over six weeks ago, those matters received final disposition on our part. ALAB-152, RAI-73-10 816 (October 5, 1973).

ATOMIC ENERGY COMMISSION REPORTS

Volume 7

OPINIONS AND DECISIONS OF THE
ATOMIC ENERGY COMMISSION
WITH SELECTED ORDERS

January 1, 1974, to June 30, 1974

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

CLI-74-5

COMMISSIONERS:

DIXY LEE RAY, *Chairman*
CLARENCE E. LARSON
WILLIAM O. DOUB
WILLIAM A. ANDERS

In the Matter of — Docket Nos. 50-329
CONSUMERS POWER Co. — 50-330
(Midland Plant, Units 1 and 2) — January 24, 1974

Mr. HAROLD F. REIS, for the applicant.

Mr. MYRON M. CHERRY, for the Saginaw Intervenors.

Messrs. MILTON R. WESSEL and JAMES N. O'CONNOR, for the Intervenor Dow Chemical Co.

Messrs. DAVID E. KARTALIA and ALBERT V. CARR, for the AEC Regulatory Staff

HEADNOTE

Commission clarified its position (Niagara Mohawk Power Corp., CLI-73-028, RAI-73-11-995) relative to licensing consideration of energy conservation issues and reaffirmed its approving citations to Shoreham (ALAB-156, RAI-73-10-831) and Midland (ALAB-123, RAI-73-5-331) proceedings. The Niagara decision was not meant to give indiscriminate approval to any energy conservation contention but, rather, instructed ASLB against barring "at the threshold" those basic issues that could have bearing on electrical demand projections. The Commission also affirmed both ASLAB and ASLB handling of the challenged issues and denied motion to reopen hearing. See also pending judicial cases (Aeschliman v. AEC, No. 73-1776, and Saginaw Valley Nuclear Study Group v. A.E.C., No. 73-1867, before D.C. Cir.) which were held in abeyance (Anchor Line Ltd. v. F.M.C., 299 F.2d 124 (D.C. Cir.), cert. denied, 370 U.S. 922 (1962)) pending agency consideration of this motion.

Guidelines must be developed on case-by-case basis due to varying circumstances and generality of "energy conservation" concept. However, as a basic threshold test, energy conservation issues: (1) must relate to some action, methods, or developments that would curtail demand for power to a level at which the proposed facility would not be needed; (2) must pertain to an alternative that is reasonably available; and (3) impact of proposed alternatives on demand must be susceptible to a reasonable degree of proof. See N.R.D.C. v. Morton, 458 F.2d 827 (D.C. Cir. 1972). Individual merits of four types of energy conservation contentions (end uses of electricity, validity of demand projections, promotional activities by applicant, and rate structure) were evaluated for admissibility as issues.

In view of broad discretion given administrative agencies to limit or preclude retroactive application of new rules developed in adjudication, Commission stated its position

not to apply Niagara decision retroactively to cases which had progressed to final order and issuance of construction permits before decision date. See S.E.C. v. Chenery Corp., 332 U.S. 194 (1947); Department Store Union v. N.L.R.B., 466 F.2d 380 (D.C. Cir. 1972); N.L.R.B. v. Majestic Weaving Co., 355 F.2d 854 (2nd Cir. 1966).

In agency licensing proceedings where public interest findings are requisite, burden of proof for ultimate permit or license issuance rests on applicant (Administrative Procedure Act 7(c); 10 CFR 2.732); however, Commission regulations under 10 CFR 50 App. D place responsibility on applicant ((A.1)(c)), staff (A.8), and ASLB (A.11) for possible consideration of energy conservation alternatives. Yet, in this emergent stage of novel and evolving energy conservation concept, intervenors also have responsibilities to state clear and reasonably specific contentions in a timely fashion, with an affirmative showing if these novel contentions are to be explored further (United Church of Christ v. F.C.C., 425 F.2d 543 (1969)).

Memorandum and Order

BACKGROUND

The Saginaw Intervenors filed with the Atomic Safety and Licensing Appeal Board a motion to "clarify" the Board's principal decision (RAI-73-5-531) in the subject proceeding in light of our recent Memorandum and Order in *Niagara Mohawk Power Corporation* (Nine Mile Point, Unit No. 2), Docket No. 50-410, RAI-73-11-995. The Appeal Board decision, affirming (with a limited exception not relevant here) the initial decision of the Licensing Board, became final some months ago. Petitions to review that order are pending before the United States Court of Appeals for the District of Columbia Circuit.[1] In these cir-

[1] ***Aeschliman* v. *AEC*, No. 73-1776, and *Saginaw Valley Nuclear Study Group* v. *AEC*, No. 73-1867.**

cumstances, the Board referred the motion to us for such disposition as we might deem appropriate. ALAB-160, RAI-73-11-1002.[2]

Pursuant to our invitation, the applicant Consumers Power Co., the intervenor Dow Chemical Co., and the AEC Regulatory Staff have submitted responses to the Saginaw motion. Saginaw was granted permission to and did file a reply to these responses.

For the reasons set forth below, insofar as the Saginaw motion seeks to reopen these proceedings, it is denied.

The Saginaw Motion

The Saginaw motion reads the Appeal Board's decision in this case as holding that the Licensing Board "properly excluded consideration of energy conservation issues raised by the Saginaw Intervenors," Motion, pp. 1-2. Read in that light, Saginaw contends that the decision conflicts with our recent *Niagara* ruling, where we said—

> It is true that the parameters of our statutory power to compel conservation are not clear. But it does not follow that all evidence should therefore be barred at the threshold. See *Long Island Lighting Co.* (Shoreham), ALAB-156, decided October 26, 1973, RAI-73-10, p. 852; *Consumers Power Co.* (Midland), ALAB-123, May 18, 1973, RAI-73-5, p. 352.

[2] Simultaneously with filing of the instant motion, the Saginaw Intervenors moved the Court of Appeals for an extension of time in which to file their brief until after disposition of the instant motion. Viewing the motion as, in substance, a request that the case be held in abeyance pending agency action (see *Anchor Line Ltd.* v. *FMC*, 299 F.2d 124 (C.A.D.C.), *cert. denied*, 370 U.S. 922 (1962), the Commission and the United States acquiesced in that procedure. The Court of Appeals directed that we rule on the motion to clarify and, if we find it necessary to reopen these proceedings, to request remand, by January 28, 1974. Order of January 11, 1974.

Saginaw questions the appropriateness of our approving citations in *Niagara* to the *Shoreham* and *Midland* opinions, drawing our attention to allegedly inconsistent portions of those opinions discussing whether the nature of customer uses represented in projected demands for electricity may be placed in issue in licensing proceedings. Motion, pp. 5-6.

Prior to the environmental hearings in the subject proceeding, Saginaw submitted to the Licensing Board a "Statement of Environmental Contentions" listing 119 separate issues it sought to raise in the hearing. The instant motion undertakes to paraphrase 17 of these "contentions," which are now characterized as "energy conservation issues." Following discussion of certain Licensing Board rulings and the initial decision, Saginaw alleges that—

> It is clear beyond peradventure that the Saginaw Intervenors raised issues of energy conservation similar to (and in some cases identical to, e.g., rate structure) those raised by the intervenor in the *Niagara* docket. It is equally clear that the Licensing Board ruled as beyond the scope of the proceedings all issues of energy conservation except, perhaps, one (promotional advertising) . . . Motion, pp. 19-20.

Saginaw goes on to allege, in substance, that the Appeal Board broadly sustained exclusion of energy conservation issues, including the claim that the Appeal Board "made it quite clear that postulated demand may not be inquired into . . ." Motion, p. 21.

The Saginaw motion requests "clarification" of the Appeal Board's decision in accordance with its reading of *Niagara* and a remand of these proceedings for further hearings on energy conservation issues. In the alternative, Saginaw requests a decision making clear "how [the Appeal Board's decision here] and *Niagara* are consistent so

that an unambiguous record may be had in the prosecution of court appeals." Motion, p. 22.

The responses filed by the applicant and the Regulatory Staff contend, among other things, that Saginaw has misinterpreted our ruling in *Niagara,* the Appeal Board's rulings in this case and in *Shoreham,* and the relevant Licensing Board rulings in this case. They note that many of the issues Saginaw now claims were excluded were, in fact, allowed. They point out that some of Saginaw's paraphrases in the instant motion of the "energy conservation" issues it sought to raise before the Licensing Board distort the administrative record. They also contend that the alleged "energy conservation" issues which were excluded by the Licensing and Appeal Boards were properly excluded from this proceeding. We agree.

The Niagara Ruling

In our recent *Niagara* ruling, we dealt for the first time with the relevance in licensing proceedings of "energy conservation" issues—a rather general term we did not there attempt to define. Saginaw apparently reads *Niagara* to mean that virtually any action or development which might ultimately lead to reduced aggregate demands for electricity, including some having quite remote or speculative effects on demand, may be made an issue in a licensing proceeding. *Niagara* established no such sweeping proposition.

In *Niagara,* the intervenors made contentions concerning concrete measures they alleged might eliminate the need for electricity to be generated by the proposed plant. Those measures included—

(1) Selective load-shedding during periods of peak demand;

(2) Changes in the rate structure for electricity designed to decrease demand—such as modification of volume discounts, or raising prices during peak demand periods:

(3) Cutting wasteful uses of electricity, such as space heating, and

(4) Reducing promotional advertising which fosters demand for electricity.

Thus framed, these contentions, at least on their face, could have a bearing on the applicant's or Regulatory Staff's projections of demand—the basic issue to which energy conservation contentions are relevant in the licensing context. It was the Licensing Board's barring "at the threshold" of any consideration of any of these questions which we disapproved.

Our citation in *Niagara* to portions of the Appeal Board's rulings in *Shoreham* and *Midland* are fully consistent with what we have said. Thus, we cited with approval page 852 (RAI-73-10) of the Board's opinion in *Shoreham,* where the Board sustained the Licensing Board's finding that the applicant's projections of power needs were reasonable. The Licensing Board had admitted certain evidence offered by an intervenor to the effect that demand might be reduced by "further educating the public in conservation measures." The Licensing Board had found, however, that that evidence—

> . . . contained little practical guidance for action beyond the significant effort already being made, and no estimate of how much demand might be reduced . . .

The Appeal Board found this to be an "accurate appraisal," and stated that it might dispose of the intervenor's argument "simply on the basis that the evidence does not support it." The Appeal Board, then, clearly ruled that the "energy conservation" evidence actually offered in *Shoreham* was properly admitted, and we endorsed that ruling in *Niagara.*

The Appeal Board's *Shoreham* opinion goes on to discuss in rather lengthy dicta "the more fundamental issue of

whether questions concerning the *nature* of electrical demand are appropriate for consideration in a proceeding of this type." (Emphasis added.) *Id.* at 852-854. The Saginaw motion inaccurately characterizes this portion of *Shoreham* as a holding. Be that as it may, *Niagara* neither approves nor disapproves this portion of *Shoreham.*

Similarly, our citation in *Niagara* to page 352 of the *Midland* decision, as reproduced in RAI-73-5, referred to that portion of the opinion (paragraph 3b) discussing the Saginaw intervenor's contention that "the demand for electricity was artificially stimulated by the applicant's advertising."[3] Such a contention raises a legitimate issue, and this was recognized by both the Licensing Board and Appeal Board, although they did not use the label "energy conservation." However, no evidence was offered in support of this contention.

As we said in *Niagara,* this is a time of "deep national concern over energy sources and supply—a concern which the Commission fully shares." But the phrase "energy conservation" has a deceptively simple ring in this context. Taken literally, the phrase suggests a virtually limitless range of possible actions and developments that might, in one way or another, ultimately reduce projected demands for electricity from a particular proposed plant.

It would be neither possible nor desirable for us to lay down, at least at this juncture, very precise guidelines governing the kinds of energy conservation issues which should be allowed in licensing proceedings. Widely varying factual circumstances in individual cases, coupled with the inherent generality of the "energy conservation" concept, dictate that such guidelines be developed on a case-by-case basis, or, perhaps, through rulemaking. Nevertheless, certain

[3] Our approving citation to page 352 of the *Midland* decision did not include the carryover paragraph from page 351 (paragraph 3a), which discusses whether inquiries into "the propriety of . . . customary uses of electricity" should be made.

basic considerations can be stated from the present vantage point. Purported energy conservation issues must meet a threshold test—they must relate to some action, methods or developments that would, in their aggregate effect, curtail demand for electricity to a level at which the proposed facility would not be needed. As discussed hereafter, several of Saginaw's alleged "energy conservation" issues have nothing to do with projected demand. Beyond that, the issue must pertain to an alternative that is "reasonably available."[4] *Natural Resources Defense Council* v. *Morton,* 458 F.2d 827, 834 (C.A.D.C. 1972). Furthermore, the impact of proposed energy conservation alternatives on demand must be susceptible to a reasonable degree of proof. Largely speculative and remote possibilities need not be weighed against a convincing projection of demand. Here, as with many other issues under the National Environmental Policy Act of 1969, a rule of reason applies. See *Natural Resources Defense Council* v. *Morton, supra.*

The contentions we approved in *Niagara* meet these tests. For example, possible restrictions on promotional advertising might well have a direct and appreciable effect on demand. The same may also be true of selective load-shedding during periods of peak demand, modifications of rate structures, or cutting wasteful uses of electricity. While the Commission might well lack authority to mandate such actions, that fact alone does not preclude our inquiry into seemingly feasible actions by State or other federal agencies. *Natural Resources Defense Council* v. *Morton, supra.*

The Saginaw "Energy Conservation" Contentions

The Saginaw motion alleges that, with the exception of one issue concerning promotional advertising, the Licensing

[4] For example, one of the Saginaw energy conservation contentions herein (contention 33) suggests investigating ways of generating electricity through means "not now known to man." Such suggestions need not be entertained.

Board ruled that issues of energy conservation were "as a matter of law, beyond the scope of the licensing proceeding." Motion, p. 15. As not above, the Saginaw motion paraphrases 17 of the 119 contentions it submitted to the Board, and characterizes them as "energy conservation" issues. Saginaw's current paraphrases of several of the contentions it actually submitted to the Board are inaccurate and misleading.[5] We deal, of course, with the contentions actually submitted to the Board.

The Saginaw "Statement of Environmental Contentions" was hardly a model pleading. As the Licensing Board noted, certain contentions of Saginaw's were "long on rhetoric and short on specificity."[6] Many contentions were redundant.[7] And many sought to raise multiple and more or less unrelated issues.[8] Although Saginaw now professes to view 17 of its 119 contentions as "energy conservation" contentions, its original submission to the Board did not point up any such common theme.[9]

[5] For example, the motion states that contention 31 related to "promotional activities such as advertising or the sale of appliances." That contention did not refer to the sale of appliances.

The motion states that contention 32 "raised the question of various methods" of energy conservation. No "methods" were suggested by that contention. In fact, the contention referred only to "the possibility of changing the present social stimuli to society which could result in decreased demand for electricity." Such a vague generality is insufficient to raise a factual issue.

The motion states that contention 33 "raised the conservation issue of denying electricity to some customers and in particular Dow Chemical Company." The contention actually deals with the possibility of securing electricity from other sources, and has no bearing on energy conservation in the sense of reducing aggregate demand for electricity.

Similar distortions of the record occur with respect to contentions 49, 88, and 89.

[6] Order with respect to Environmental Issues, March 27, 1972, p. 7 (hereafter "Order").

[7] See, *e.g.*, contentions 31, 47, 75 and 76 concerning promotional activities.

[8] See, *e.g.*, contentions 33 and 34.

In response to this diffuse barrage, both the Licensing Board and the Appeal Board dealt with the contentions by groups, except where they considered it necessary to refer to specific contentions. We will deal similarly with the alleged "energy conservation" contentions.

Summarizing the analysis which follows, we find that Saginaw properly raised one related group of legitimate energy conservation issues which the Licensing Board allowed. Saginaw obliquely raised a second energy conservation issue essentially similar to the rate structure issue we allowed in *Niagara*, which the Board also allowed. The Board properly excluded several alleged energy conservation contentions concerning certain customer uses of electricity. Finally, several other contentions of Saginaw's allegedly precluded by the Board were in fact allowed, but they had nothing to do with energy conservation.

1. Contentions Relating to Promotional Activities

Contentions 31, 47, 75 and 76 deal redundantly with the claim that the applicant has created artificial demands for electricity through advertising and other (largely unspecified) promotional activities. As we held in *Niagara*, contentions of this nature raise legitimate energy conservation issues. The Licensing Board authorized the introduction of evidence on such matters.[10] Saginaw never offered any

[9] Rather, the alleged "energy conservation" issues were scattered under four separate subject matter headings, only one of which had any direct bearing on energy conservation.

[10] The Board's order stated that "in its affirmative case, Saginaw should . . . specify the portion of the demand attributable to advertising by applicant and the basis of that conclusion." Order, p. 9. A similar promotional advertising contention was raised by the Mapleton Intervenors and allowed by the Board. Order, p. 14. In

such evidence, and the Licensing Board held that absent some evidence that the applicant was creating abnormal demand, it would not consider the question. The record did contain substantial evidence and the Board found that "postulated demand is made up of normal industrial and residential use." The Appeal Board affirmed these rulings.

2. Contentions Relating to Rate Structure

The Saginaw motion alleges that contention 49—

> called into question the Michigan Public Service Commission's rate structure applicable to applicant's marketing of electricity arguing that the existing rate structure encourages rather than discourages demand.

Evidence pertaining to such a contention is admissible, as we held in *Niagara*. But no such contention was made here. Saginaw's contention 49 actually reads as follows:

> Applicant and the Michigan Public Service Commission have illegally created an incentive for continual construction of generating facilities when they are unnecessary. The rate structure imposed upon Applicant by the Michigan Public Service Commission encourages Applicant to create unwarranted costs upon the environment. Because Applicant's ability to receive a fair return on its invested capital is directly related to outstanding amounts of unamortized construction and other capital costs, Applicant has an incentive to continue to construct power facilities, whether necessary or not, in order to maintain an artificially high rate structure. Specifically, Intervenors contend that Applicant is failing to use existing generating facilities to the extent of their useful lives and it is taking such

addition, the Board ruled generally that "the need for power from the proposed plant is, of course, an issue in this proceeding." Order, p. 10.

> facilities out of base load or peaking service after such facilities have been amortized and removed from consideration of Applicant's rate structure. Thus, the proposed Plant represents an attempt to construct a facility in order to maintain an artificially high rate structure and, as such, it represents an unwarranted cost to the environment.

The burden of this contention, of course, is that the State's rate structure encourages construction of unneeded plants. Whatever the merits of that contention may be, it raises an entirely different issue from the issue we approved in *Niagara*. The *Niagara* issue, relating to rate structures which may possibly encourage high-volume consumption of electricity, bears on our concept of energy conservation. The Saginaw contention has, at best, a remote relationship to energy conservation.

Saginaw obliquely raised an issue essentially similar to the *Niagara* rate structure issue in the last sentence of its contention 88. Most of that contention was addressed to the separate issue whether projected growths of certain of the applicant's large industrial users were accurate. However, the contention concludes with the statement that—

> Concomitantly, applicant has failed to factor into its projection the possibility that rate structures will be revised so as to make large use of electricity on a per unit basis more expensive thereby discouraging the increased use of electricity.

Since the Licensing Board ruled generally with respect to the group of contentions in which this contention was included that "the need for power from the proposed plant is . . . an issue in this proceeding," its disposition of this contention is consistent with *Niagara*. No evidence was offered and the Board did not further consider this con-

tention, consistent with our views (discussed hereafter) on burden of proof in this area. Nevertheless, it is appropriate to state our position that we will not apply *Niagara* retroactively to cases which had progressed to final order and issuance of construction permits before *Niagara* was decided.

Administrative agencies have broad discretion to limit or preclude retroactive application of new rules developed in adjudication. See *SEC* v. *Chenery Corp.*, 332 U.S. 194, 203 (1947); *Department Store Union* v. *NLRB*, 466 F.2d 380, 388-390 (C.A.D.C. 1972); *NLRB* v. *Majestic Weaving Co.*, 355 F.2d 854, 860-861 (C.A. 2 1966). Among the factors to be weighed are whether the new rule represents a departure from prior practice, the reliance of the parties on past practice and consequent burdens imposed by retroactive application of the new rule, and the governmental interest in applying it to past cases. Weighing those factors in this context, we believe that the balance of relevant considerations dictates prospective application of our decisions in the unfolding area of energy conservation.

3. Contentions Relating to Customer Uses of Electricity

Several of Saginaw's "environmental contentions" apparently relate, wholly or in part, to possible customer uses of electricity. Most of these contentions are too vague to raise a factual issue in this context. Thus, contention 32 speaks of "the possibility of changing the present social stimuli to society which could result in decreased demand for electricity . . . ." Contentions 73 and 74, which we treat below as relating to demand projections, also appear to question—by reference to "social and scientific stimuli" and "useful social stimuli"—the "validity" of certain customer uses of electricity. Contention 76, which also discusses promotional activities, questions "whether a demand is created by encouraging the public to use unnecessary and nonutilitarian products which use large amounts of electricity in the course of fabrication and production."

The Dow Chemical Company plant in Midland will receive process steam and electricity from the proposed plant. Contention 34 suggests that certain of Dow's products, such as "chlorinated hydrocarbons or 2-4-5-T" may be harmful to the environment. The Licensing Board excluded this contention, rejecting "the argument that this proceeding must consider the social values of the end uses of the power to be produced." [11] The Appeal Board affirmed this ruling, observing that such contentions "seek to expand the NEPA review well beyond the pale of what we view as required by NEPA." [12]

Contentions of this kind do not, in our view, raise legitimate energy conservation issues. For example, the Saginaw contention concerning the alleged environmentally harmful characteristics of some of Dow's products has, at best, a very speculative effect on demand. Dow and similar companies manufacture a wide range of products. Should one product be discontinued for environmental reasons, it is reasonable to assume that another product would take its place. Thus, Dow's energy requirements and the need for the proposed plant would not be affected.

Moreover, as the Appeal Board pointed out in *Shoreham*,[13] prediction of the environmental effects of the uses of electricity is highly speculative and remote from the basic question whether the proposed plant should be authorized. See *First National Bank of Homestead* v. *Watson*, 363 F.Supp. 466, 5 ERC 1497 (D.D.C. 1973). The record here, as in *Shoreham*, reflects that the facility is needed to satisfy normal residential and industrial demand. Giving effect, therefore, to the rule of reason applicable under NEPA, and absent special circumstances, Licensing Boards are

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[11] Order, p. 8.

[12] ALAB-123, RAI-73-5-331, 351-352.

[13] *Long Island Lighting Company* (Shoreham Nuclear Power Station), RAI-73-10-831, 853 (1973).

not required to entertain contentions concerning alleged environmental effects of customer uses of electricity.[14]

We note, however, that even with respect to these issues the Board did not exclude proferred evidence "at the threshold." Rather, respecting Saginaw's repeated concern with "useful social stimuli," the Board stated that Saginaw could "postulate its own view of socila [*sic*] validity, and argue the proposition at an appropriate time."[15] Thus, Saginaw was invited to recast these contentions in more specific terms, an invitation it did not accept.

4. Contentions Relating to Projected Demand

Six of Saginaw's "energy conservation" contentions, fairly read, related to the validity of electricity demand projections generally and for the proposed plant. Thus, contention 73 alleges very generally that demand projections should be analyzed from the perspective of ways to decrease demands for electricity. Contention 74 states that possible availability of electricity from sources other than the proposed plant to meet projected demands must be analyzed. Contention 81 questions the applicant's projections concerning continued industrial growth in the State of Michigan. Contention 87 questions the applicant's assumptions concerning future uses of room air conditioners. Contention 88 alleges that the applicant had incorrectly analyzed projected growth of its major users of electricity, such as General Motors and Dow Chemical. Contention 89 questions an asserted relationship between gross national product and the automobile industry, as it relates to the applicant's demand projections. None of these contentions

[14] In addition, inquiries into environmental effects of customer uses could lead to virtually interminable hearings on collateral issues. The hearing transcript in this protracted proceeding is almost 8,000 pages long, and the entire record exceeds 24,000 pages.

[15] Order, p. 11.

raise valid energy conservation issues—i.e., they do not indicate ways in which concededly accurate demand projections might be reduced.

In any event, the Licensing Board ruled that "the need for power from the proposed plant is . . . an issue in this proceeding," thereby allowing each of these contentions.[16] The Saginaw motion makes no reference to this ruling, and Saginaw introduced no evidence concerning these contentions. The record contains substantial evidence supporting the applicant's demand projections.[17]

5. Other Contentions

Saginaw argues that four other "energy conservation" contentions were improperly excluded. These remaining contentions have nothing to do with energy conservation, as we define that concept.

Contention 33 is concerned with whether Dow Chemical could purchase power from other of the applicant's generating facilities, whether Dow might modify its existing fossil fuel facilities, or whether Dow and other customers might procure electricity through "conventional means" or "other means not now known to man." None of these contentions is relevant to the reduction of projected demands for electricity. On the contrary, these contentions postulate the validity of projected demands, and argue that they should be met from other sources. The Appeal Board stated in this connection that—

> The applicant's ability to obtain electricity from other sources was the subject of extensive testimony, which fully supports the Board's finding that "outside sources are unavailable."[18]

[16] Order, p. 10.

[17] See Initial Decision, paragraph 47, TID-26300, pp. 214, 223.

[18] RAI-73-5-331, 351.

Contention 72 alleged certain deficiencies in the regulatory staff's assessment of costs of generating electricity through nuclear power. These alleged deficiencies related entirely to radiological matters. Contention 85 questions the applicant's assertion that the proposed plant will "maintain and enhance living standards." In a similar vein, contention 92 appears to question whether the need for electricity will provide jobs for an increased number of adults. The latter two contentions are too vague to raise an issue in this context and, in any event, seemingly have nothing to do with energy conservation.

SAGINAW'S PROCEDURAL DEFAULTS—BURDEN OF PROOF

Contrary to Saginaw's argument, its validity framed energy conservation contentions were allowed by the Licensing Board. We also believe, however, that serious procedural defaults by Saginaw in the course of these proceedings bear on the appropriate disposition of this motion.

The record in this case does not reflect any out-of-hand rejection of Saginaw's alleged energy conservation issues. The Board was obviously troubled, however, by the vague and rhetorical quality of many of these contentions. As to several contentions, Saginaw was invited to make more specific submissions.[19] Further, the Board acknowledged that "written detailed questions would undoubtedly be useful in further refining the issues to be contested" and invited submission of such questions.[20] Saginaw did not respond to these invitations.

The Board scheduled a hearing on environmental issues for May 1972. On the ground that its counsel was engaged in other matters, Saginaw requested an indefinite postponement of that hearing. The Board justifiably denied that re-

[19] See note 10, *supra*, and accompanying text, and page 28. [P. 272 this appendix.]

[20] Order, p. 2.

quest, and Saginaw did not appear or participate in the fourteen days of environmental hearings.[21]

Section 2.754 of our rules authorizes licensing boards to require submission of proposed findings of fact and conclusions of law by participating parties. All parties, including Saginaw, were directed to file proposed findings and conclusions.[22] The Saginaw submission stated with respect to environmental issues that they had "no conventional findings of fact to set forth." As the Licensing Board noted in its initial decision, this failure to file proposed findings and conclusions "made it virtually impossible in some instances to know whether particular issues of fact are contested."[23] Addressing the same point, the Appeal Board stated that "participation in this manner, in our opinion, subverts the entire adjudicatory process."[24] We agree. Particularly in these circumstances, Saginaw's complaint that it was not granted a hearing on alleged energy conservation issues comes with ill grace.

Saginaw argues in its reply that its procedural defaults are irrelevant. It contends that the Licensing Board must consider all environmental issues, whether contested or not, and that since the record in the case and the Board's decision do not in terms reflect consideration of "energy

[21] We agree with the Appeal Board's observation—"While the Board undoubtedly should attempt to accommodate legitimate requests for postponement, it is not required to accede to blanket requests for indefinite postponement which are not accompanied by a good-faith attempt to define a mutually convenient schedule. In any event, counsel who participate in AEC proceedings have an obligation not to over-extend their commitments so as to frustrate the objective of bringing licensing proceedings to a conclusion within a reasonable time frame." RAI-73-5-331, 352-353.

[22] Order of June 28, 1972.

[23] Initial Decision, TID-26300, pp. 214, 216 at n.10.

[24] ALAB-123; RAI-73-5-331, 332.

conservation," a remand for further proceedings is required.[25]

Established rules of burden of proof governing conventional civil litigation are not necessarily completely dispositive in agency licensing proceedings where affirmative public interest findings are requisite. See, *e.g., United Church of Christ* v. *FCC,* 425 F.2d 543, 546-550 (1969). Particularly is this true under NEPA, which, of course, imposes upon us an affirmative obligation to develop an adequate record upon which to assess the environmental impact of proposed nuclear plants. Giving appropriate recognition to these general principles, we must nevertheless have workable subsidiary rules for the orderly conduct of these proceedings.

The burden of proof on the ultimate question whether a permit or license should be issued is on the applicant. Administrative Procedure Act, § 7(c) (5 U.S.C. 556(d)); 10 CFR 2.732. This burden includes preparation of an environmental report describing the impact of the proposed action, including alternatives to the proposed action. 10 CFR Part 50, App. D, ¶ A.1(c). As *Niagara* makes clear, such alternatives may in particular cases include energy conservation alternatives. Consistent with NEPA, the Regulatory Staff must independently prepare draft and final environmental impact statements, including, in appropriate cases, discussion of energy conservation alternatives. Appendix D, ¶ A.8. And the licensing boards must, on the record thus developed, "independently consider the final balance among conflicting environmental factors" (Appendix D, ¶ A.11), including possible energy conservation factors.

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[25] We attribute no significance to the absence of the phrase "energy conservation" from the record or the Board's decision. "Energy conservation" is only now becoming a term of art.

But workable rules in this setting must take into account that energy conservation is a novel and evolving concept.[26] NEPA "does not require a 'crystal ball' inquiry." *Natural Resources Defense Council* v. *Morton, supra.* at 837. This consideration has led us to hold that we will not apply *Niagara* retroactively. As we gain experience on a case-by-case basis and hopefully, feasible energy conservation techniques emerge, the applicant, staff, and licensing boards will have obligations to develop an adequate record on these issues in appropriate cases, whether or not they are raised by intervenors.

However, at this emergent stage of energy conservation principles, intervenors also have their responsibilities. They must state clear and reasonably specific energy conservation contentions in a timely fashion. Beyond that, they have a burden of coming forward with some affirmative showing if they wish to have these novel contentions explored further.[27]

This Commission, applicants, and public interest groups are involved in truly creative proceedings, hopefully striking reasonable balances between complex and frequently competing considerations. Particularly in this setting, there is a need for compliance with procedures designed to develop and refine the issues, and for a spirit of accommodation, if the system is to work. Saginaw fell far short in these respects.

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[26] In its initial effort to deal with energy conservation questions, we note that the Federal Power Commission stated that "conservation of energy is currently an evolving concept . . . without a uniformly accepted definition . . ." *Measures to Implement Conservation of Natural Resources,* adopted November 13, 1973, 38 *Fed. Reg.* 31963, 31964.

[27] We do not equate this burden with the civil litigation concept of a *prima facie* case, an unduly heavy burden in this setting. But the showing should be sufficient to require reasonable minds to inquire further. Compare *United Church of Christ,* v. *FCC, supra.*

Insofar as the pending motion seeks clarification of our *Niagara* ruling, it has been granted. The motion is, in all respects, denied.[28]

It is so ORDERED.

By the Commission

GORDON M. GRANT
Acting Secretary of The Commission

Dated at Germantown, Maryland,
this 24th day of January, 1974.

[28] We have received a letter dated January 21, 1974, from Saginaw making additional allegations in support of its motion, and a telegram from the licensee in response. These submissions, as framed, do not affect our disposition of the matter.

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

CLI-74-7

COMMISSIONERS:
DIXY LEE RAY, *Chairman*
CLARENCE E. LARSON
WILLIAM A. ANDERS

In the Matter of
CONSUMERS POWER COMPANY — Docket Nos. 50-329, 50-330

(Midland Plant, Units 1 and 2) — February 5, 1974

Mr. HAROLD F. REIS, for the applicant.

Mr. MYRON M. CHERRY, for the Saginaw Intervenors.

Messrs. DAVID E. KARTALIA and ALBERT V. CARR, for the AEC Regulatory Staff.

Memorandum and Order

We have yet another petition from the Saginaw Intervenors seeking to reopen the record in the subject proceeding.[1] Even though we recently denied one petition filed by these Intervenors, and so advised the United States Court of Appeals for the District of Columbia Circuit where judicial review of this proceeding is pending, Saginaw now seeks to reopen on still other grounds.

Saginaw claims that after the final agency decision in this proceeding, entered a number of months ago, changed

[1] The petition is jointly signed by the Sierra Intervenors, represented by the same counsel as Saginaw, who are participating in the separate show cause proceeding involving the Midland facility. That proceeding, described in our Memoranda and Orders of December 20, 1973, and January 21, 1974, RAI-73-12-1082 and 74-1-7, is limited to quality assurance issues, and has nothing at all to do with the points raised here by Saginaw.

circumstances require us to reassess the NEPA cost-benefit analysis concerning the Midland facility. One alleged change, based on newspaper clippings, relates to increased construction costs of the facility. The other asserted change, not substantiated by anything, is that Dow Chemical Company may not actually purchase process steam from the facility upon its completion. The latter charge is similar to one made by Saginaw in a postscript to a letter dated January 21, 1974.

We decline to reopen on the grounds asserted. It is almost inevitable that particular facts may change in complex cases like this one between the close of administrative hearings, final agency action, and judicial review. This is especially true in the case of economic costs, which always reflect the impact of inflation. If such changes were to trigger rehearings, "there would be little hope that the administrative process could ever be consummated in an order that would not be subject to reopening." *ICC* v. *Jersey City*, 322 U.S. 503, 514 (1944). A response filed by the licensee negates Saginaw's unsupported assertion concerning Dow.[2] Accordingly, the Saginaw petition is denied.

It is so ORDERED.

By the Commission

R. E. McKINNEY
Acting Secretary of the Commission

Dated at Washington, D. C. this 5th day
of February, 1974.

[2] The time for filing responses to this petition was fixed at February 4, 1974. The licensee's motion to fix that time at February 8, 1974, is denied.

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

CLI-74-8

COMMISSIONERS:
DIXY LEE RAY, *Chairman*
CLARENCE E. LARSON
WILLIAM O. DOUB
WILLIAM A. ANDERS

In the Matter of
CONSUMERS POWER COMPANY

Docket Nos. 50-329
50-330

(Midland Plant, Units 1 and 2)

February 20, 1974

Mr. MYRON M. CHERRY, for the Saginaw Intervenors.

Memorandum and Order

On February 5, 1974 (RAI-74-2, p. 148), we denied a second petition from the Saginaw Intervenors seeking to reopen the record in the subject proceedings because of changed circumstances allegedly altering the NEPA cost-benefit analysis concerning the Midland facility. We have since received a letter from Saginaw supplementing that petition which we will treat as a petition for reconsideration.

Saginaw points out that under revised contractual arrangements between the licensee and The Dow Chemical Company, Dow will not be obligated to close down its existing fossil fuel generating facilities when steam and electricity become available from the Midland facility. This information was before us when we denied the last petition.* Moreover, it appears that notwithstanding these changed contractual arrangements, the Dow facilities may be operated only on a stand-by basis, or may be closed down.† In

*Opposition of Consumers Power Company, Attachment C.
†Id.

any event, the closing of Dow's fossil fuel facilities was but one of many factors in the overall NEPA cost-benefit analysis. Our review of the record as a whole shows that it was not a determinative factor. Accordingly, and in the interests of finality in these already protracted proceedings, we reaffirm our denial of the petition to reopen.

It is so ORDERED.

By the Commission

GORDON M. GRANT
Acting Secretary of the Commission

Dated at Germantown, MD this
20 day of February 1974.

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

CLI-74-15

COMMISSIONERS:
DIXY LEE RAY, *Chairman*
WILLIAM O. DOUB
WILLIAM E. KRIEGSMAN
WILLIAM A. ANDERS

In the Matter of — Docket Nos. 50-329
CONSUMERS POWER Co. — 50-330

(Midland Plant, Units 1 and 2) — April 11, 1974

Memorandum and Order

We have previously denied the Saginaw intervenors' repeated efforts to reopen these proceedings on a number of different grounds,[1] one of which dealt with Saginaw's unsupported charge that, as a result of contract renegotiations, the Dow Chemical Company may not actually purchase process steam from the completed Midland facility. A response to the charge filed by the Licensee assured us that Dow remained contractually obligated to purchase steam. On the basis of that assurance, without calling for the contract itself, we denied a Saginaw petition to reopen.[2]

Since then, however, with our orders stemming from these proceedings pending review before the United States Court of Appeals for the District of Columbia Circuit,[3] Dow took the rather unusual step of moving to withdraw

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[1] Consumers Power Co. (Midland Plant, Units 1 & 2), RAI-74-1-19; 74-2-147; 74-2-149.

[2] RAI-74-2-147.

[3] *Aeschliman* v. *AEC, Saginaw Valley Nuclear Study Group* v. *AEC*, Nos. 73-1776 and 1867.

from the judicial proceedings, and its motion was granted.[4] This development, coupled with Saginaw's continued assertions that Dow's obligation to purchase steam and electricity from the completed Midland facility may now be illusory,[5] prompted us to call for all contracts executed by these parties dealing with the Midland facility.

We have carefully reviewed the relevant portions of these contracts and reaffirm our prior determination that there are no "changed circumstances", as alleged by Saginaw, warranting a reopening of these proceedings. We think it sufficient to note that Dow has a contractual commitment to purchase large quantities of process steam from the completed facility, that substantial purchases of electricity are also contemplated, and that Dow's existing fossil-fueled facilities are to be maintained primarily on a stand-by basis.

The contracts are hereby made a part of the record, and we are sending copies of the contracts to the Saginaw and Mapleton intervenors.

It is so ORDERED.

By the Commission

GORDON M. GRANT
Assistant Secretary of the Commission

Dated at Washington, D. C.
this 11th day of April, 1974.

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[4] Order of March 25, 1974.

[5] Brief for the Saginaw petitioners, pp. 2-3.

ATOMIC ENERGY COMMISSION REPORTS

Volume 8

OPINIONS AND DECISIONS OF THE
ATOMIC ENERGY COMMISSION
WITH SELECTED ORDERS

July 1, 1974, to January 18, 1975

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

ALAN S. ROSENTHAL, *Chairman*
DR. JOHN H. BUCK, *Member*
RICHARD S. SALZMAN, *Member*

In the Matter of
POTOMAC ELECTRIC POWER COMPANY
(Douglas Point Nuclear Generating
Station, Units 1 and 2)

Docket Nos. 50-448
50-449

MR. GERALD CHARNOFF, Washington, D.C., argued the cause and MR. THOMAS BAXTER, Washington, D.C., filed a brief for the applicant, Potomac Electric Power Company.

MR. GLENN L. REITZE, Washington, D.C., *pro se*.

MR. ROY E. KINSEY, JR., argued the cause and

MR. FREDERIC S. GRAY filed a brief for the AEC Regulatory Staff.

Memorandum and Order

July 15, 1974

This is an appeal from an order denying Glenn L. Reitze leave to intervene on the ground that his "generic" contentions regarding the uranium fuel cycle's adverse environmental effects may not be entertained in a construction permit proceeding. The decision below was handed down on May 16, 1974; on June 6, 1974 a new Commission regulation governing the subject of Mr. Reitze's contentions became effective. 10 C.F.R. Part 50, App. D., § A.15 (1974 rev.). (39 *F.R.* 14188, April 22, 1974). But for one consideration, we would be constrained to hold that the Licensing Board's decision, although correct at the time rendered, must be set aside in light of the new regulation and Mr. Reitze allowed to intervene. That consideration is that Mr. Reitze has informed us that he does not desire to participate in the fuel cycle aspects of the proceeding unless he is free to challenge the validity of certain substantive provisions of the regulation. Since such a challenge would plainly be impermissible, a direction to admit him as a party would be an idle exercise. We therefore affirm the Licensing Board's order denying intervention.

I

On February 22, 1974, we dismissed an earlier appeal by Mr. Reitze from the Licensing Board's order excluding certain contentions advanced in his petition to intervene in this construction permit proceeding. We did so on the ground that an impermissible interlocutory appeal was involved since the Licensing Board had allowed him to intervene on the strength of two other contentions asserted in his petition.[1] Mr. Reitze thereafter petitioned the Licens-

[1] ALAB-176, RAI-74-2 151. As we pointed out, citing prior decisions, the Rules of Practice "preclude the taking of an interlocutory appeal from any licensing board ruling other than one directly concerned with the grant or denial of status as an intervenor . . . ."

ing Board for leave to withdraw the two contentions (Nos. 8 and 11) which the Board had previously found acceptable and to add six new contentions. By order of May 16, 1974, the Board allowed him to withdraw contentions Nos. 8 and 11, determined that his six new contentions (Nos. 15-20) were unacceptable because they raised isues beyond the scope of an individual licensing proceeding, and dismissed the intervention petition. Mr. Reitze now appeals from this dismissal. Unlike his earlier appeal, this one does involve a licensing board ruling "directly concerned with the grant or denial of status as an intervenor" (see fn. 1, *supra*) and we therefore have jurisdiction to entertain it. 10 C.F.R. § 2.714a (1974 rev.).

The first five contentions in Mr. Reitze's initial petition dealt generally with the environmental effects of the nuclear fuel cycle. The major thrust of those contentions was that approval of the construction of the Douglas Point facility would encourage the production of enriched nuclear fuel and that the generation of the electricity required for such production occasions "environmental destruction as well as the depletion of valuable resources." It was further claimed that other aspects of the fuel cycle also require the expenditure of energy and that, according to one authority, on a pound-for-pound basis some fossil fuels produce as much effective energy as uranium ore.[2]

In its February 6, 1974 order, the Licensing Board ruled that the fuel cycle contentions "were outside the scope of this proceeding" because of our prior decisions in the *Vermont Yankee*[3] and *Shoreham*[4] proceedings.[5]

[2] At the Special Prehearing Conference, Mr. Reitze indicated that by these contentions he sought to question the adequacy of the consideration of the environmental effect of the entire nuclear fuel cycle—including not only the enrichment process but also all other phases of the cycle from mining to waste disposal (Tr. 52).

[3] *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-56, 4 AEC 930 (June 6, 1972), peti-

Several of the contentions which Mr. Reitze later sought to add to the petition to intervene similarly were addressed to the environmental effects of mining, manufacturing, use and disposition of nuclear fuel. (Nos. 15-18.) Specifically, he claimed that the applicant had failed to include in its environmental report a consideration of a number of such effects. The applicant and the staff urged, among other things, that these contentions too were barred by *Vermont Yankee* and *Shoreham*. The Board accepted those arguments and held in its May 16 order that Mr. Reitze's new contentions were not justiciable in the present proceeding.[6] The Licensing Board also rejected Mr. Reitze's remaining contentions (Nos. 19 and 20)[7] and, noting that

tion for review of final decision (ALAB-179, RAI-74-2, 159, February 28, 1974) pending *sub nom.*, N.R.D.C. 1. A.E.C. (No. 74-1385, D. C. Cir.).

[4] *Long Island Lighting Co.* (Shoreham Nuclear Power Station), ALAB-99, RAI-73-2, 53 (February 1, 1973), petition for review of final decision (ALAB-156, RAI-73-10, 831, October 23, 1973) pending *sub nom., Lloyd Harbor Study Group* v. *A.E.C.* (No. 73-2266, D. C. Cir.).

[5] It was this ruling that Mr. Reitze sought to have us review in his earlier appeal. See fn. 1, *supra*.

[6] In view of this conclusion, the Board found it unnecessary to pass upon the applicant's insistence that good cause had not been established for the untimeliness of the new contentions.

[7] No. 19 pertained to the applicant's failure to account in its environmental report for the limitations on tort recovery imposed on it and its suppliers in the event of accident, apparently a reference to the operation of the Price-Anderson Act, 42 U.S.C. § 2210 (1970); No. 20 asserted that the applicant's environmental report failed to take into account potential risks of sabotage to the facility. We agree that those contentions were properly rejected and require no further treatment in this opinion. 10 C.F.R. § 50.13 (1974 rev.); *Long Island Lighting Company* (Shoreham Nuclear Power Station), ALAB-156, RAI-73-10, 831, 851 (October 26, 1973); *Consolidated Edison Co. of New York, Inc.*, (Indian Point Station, Unit 2), ALAB-197R. (Published), RAI-74-5, 826, 829-30

he had withdrawn the two contentions previously accepted, dismissed him from the proceeding.

In April 1974 the Commission completed a rulemaking proceeding which had been evaluating the consequences of the use of uranium as a fuel. The results of that proceeding included a detailed report of the Commission's findings entitled *Environmental Survey of the Uranium Fuel Cycle*[8] and a reflection of those findings in an amendment to the Commission's regulations implementing the National Environmental Policy Act of 1969 (Appendix D to 10 C.F.R. Part 50). The new regulation, (10 C.F.R. Part 50, App. D, § A.15, 39 *F.R.* 14188, 14191, April 22, 1974) adds to section A of Appendix D new subsections 15(a) and (b). (For convenience we shall refer to the new rule simply as "subsection 15.")[9]

Subsection 15(a) requires the introduction into the cost/benefit analysis prepared for each proposed nuclear facility quantified environmental effects of the uranium fuel cycle developed in the Commission's rulemaking proceeding and states that "[n]o further discussion of such environmental effects shall be required." Subsection 15(b), however, goes on to provide that the new requirement does not apply to any applicant's environmental report submitted prior to June 6, 1974 or to any "Final Environmental Statement" for which a Draft Statement had been circulated before that date. See p. 86, *infra*.

All parties to this appeal have taken cognizance of the Commission's new fuel cycle regulation—which, to the ex-

(April 25, 1974), *affirmed on this point*, CLI-74-23, RAI-74-6, 947, 948 (at fn. 2); (June 21, 1974); *Siegal* v. *A.E.C.*, 400 F.2d 778 (D. C. Cir. 1968).

[8] WASH-1248, April 1974.

[9] A petition for review of that new rule has been filed in the United States Court of Appeals for the District of Columbia Circuit. (*N.R.D.C.* v. *A.E.C.*, No. 74-1586, filed June 7, 1974.)

tent it may "differ" from our decision in *Vermont Yankee* (ALAB-56), strips that decision of any "further precedential significance." 39 *F.R.* 14188. Mr. Reitze's brief implies that the new rule supports his right to intervene and urges that the decision below be reversed; the applicant and the staff, however, assert that it requires the Licensing Board's denial of intervention to be affirmed.

II

The parties correctly focus on the Commision's new regulation and its application to this proceeding. As recently as this year the Supreme Court has reiterated that the law in effect at the time a judicial decision is rendered governs that decision. *Bradley* v. *Richmond School Board,* 416 U.S. —, 40 L.Ed. 2n 476 (1974). Where a case is on appeal and the governing statute or controlling regulations have been changed during its pendency, the current law must be applied even though it means that the decision below, though valid when rendered, must be overturned. *Ibid.; Thorpe* v. *Housing Authority,* 393 U.S. 268 (1969). And, in deciding *Bradley* v. *Richmond School Board,* the Supreme Court unanimously rejected the contention that a change in the law must be given effect in pending cases only where that is its clearly stated intention, holding instead that the new law must be applied "unless doing so would result in manifest injustice or there is statutory direction or legislative history to the contrary." This rule is not new. Its origin can be traced back in American jurisprudence at least as far as Chief Justice Marshall's decision in *United States* v. *Schooner Peggy,* 5 U.S. (1 Cranch) 103 (1801),[10] and it compels our application of new subsection 15 in deciding this appeal.

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[10] "It is in the general true that the province of an appellate court is only to inquire whether a judgment when rendered was erroneous or not. But if, subsequent to the judgment, and before the decision of the appellate court, a law intervenes and positively changes the rule which governs, the law must be obeyed, or its obligation denied. If the law be constitutional . . . I know of no court which can contest its obligation. It is true that in mere private cases between individuals, a court will and ought to struggle hard against a construction which will, by a retrospective operation, affect the rights of parties, but in great national concerns . . . the court must decide according to existing laws, and if it be necessary to set aside a judgment, rightful when rendered, but which cannot be affirmed but in violation of law, the judgment must be set aside." 5 U.S. (1 Cranch) at 110.

III

1. Mr. Rietze seeks leave to intervene so that he may urge the Licensing Board to include the adverse environmental effects of the uranium fuel cycle in the balance in weighing the costs against the benefits of constructing the Douglas Point nuclear facility. The staff and the applicant continue to oppose his intervention. Here, as before the Licensing Board, their opposition is bottomed on their reading of *Vermont Yankee, supra,* and our related opinions dealing with earlier attempts to inject uranium fuel cycle contentions into other licensing proceedings. These contentions are "generic"; that is to say they apply with equal force to all reactors fueled with uranium. Applicant and the staff understand *Vermont Yankee et al.* to hold such across-the-board issues inherently unsuitable for consideration in individual licensing proceedings and to relegate generic contentions exclusively to rulemaking proceedings conducted by the Commission.

Applicant and the staff acknowledge that the Commission has now completed rulemaking on the uranium fuel cycle issue. They also recognize that new subsection 15 is the product of that rulemaking and provides a means and a requirement to factor the environmental consequences of the uranium fuel cycle into individual licensing cases. They assert nevertheless that the new regulation does not permit those factors to be taken into account in this case. This

result follows, they urge, from the provision in new subsection 15 that it "does not apply" to any applicant's environmental report submitted or to any Draft Environmental Statement circulated prior to June 6, 1974. As those documents were submitted and circulated in this case before that date, applicant and staff contend (1) subsection 15 does not aid Mr. Reitze; (2) the rule of *Vermont Yankee is here applicable;* (3) accordingly, the fuel-cycle issue is not a permissible contention; and (4) the Licensing Board's refusal to allow Mr. Reitze permission to intervene was correct. We do not concur.

2. We agree that a proper understanding of the interplay between the *Vermont Yankee* line of cases and the Commission's new rule is necessary to the proper disposition of this appeal. But the applicant and the staff misconceive the basic rationale of those decisions and as a consequence have applied the new subsection 15 incorrectly.

The law does not preclude administrative agencies from passing on issues of general applicability in individual adjudications. On the contrary, regulatory agencies may—and many do—decide so-called "generic" issues on a case-by-case basis; the right to do so is well established. *S.E.C.* v. *Chenery Corp.*, 332 U.S. 194, 202-203 (1947); *N.L.R.B.* v. *Seven-Up Bottling Co.*, 344 U.S. 344(1953); *California* v. *Lo-Vaca Gathering Co.*, 379 U.S. 366, 371 (1965); *N.L.R.B.* v. *Beech-Nut Lifesavers, Inc.*, 406 F.2d 253, 257-258 (2nd Cir. 1968); *certiorari denied*, 394 U.S. 1012 (1969). So too, when in their informed judgment it seems wiser for the resolution of broad issues of general applicability to proceed via a rulemaking proceeding where all concerned may participate, agencies may elect that course in lieu of adjudication. *Weinberger* v. *Hynson, Westcott & Dunning*, 412 U.S. 609, 624-25 (1973); *American Commercial Lines* v. *Louisville and Nashville R.R.*, 392 U.S. 571, 591-92 (1968); *F.P.C.* v. *Texaco, Inc.*, 377

U.S. 33, 42-44 (1964); *United States* v. *Storer Broadcasting Co.*, 351 U.S. 192 (1955). The teaching of those Supreme Court decisions is that "the choice made between proceeding by general rule or by individual, ad hoc litigation is one that lies primarily within the informed discretion of the administrative agency." *N.L.R.B.* v. *Bell Aerospace Co.*, 416 U.S. —, 40 L.Ed. 2d 134, 139 (1974), quoting *S.E.C.* v. *Chenery Corp., supra.* Absent some statutory inhibition—and we find none applicable to the Commission and none has been suggested to us—the Commission and other administrative agencies have the flexibility to defer broad across-the-board issues presented in a multitude of individual adjudicatory proceedings and to consolidate them for consideration in a single rulemaking proceeding, while continuing in the interim to rely on individual adjudications to resolve remaining questions. *Union of Concerned Scientists* v. *A.E.C.*, — F.2d —, 6 ERC 1705, 1712 (D.C. Cir 1974); *Hale* v. *F.C.C.*, 425 F.2d 556 (D.C. Cir. 1970). In the words of Judge Friendly in an analogous situation,

> it would be absurd that the issue of the environmental effect of uranium mining in Wyoming should have to be separately considered on every application to construct nuclear plants from Maine to California. Rather the idea that a licensing agency should endeavor to identify environmental issues common to many applications and handle them in "generic" proceedings would seem to benefit all parties particularly the poorly-financed environmental groups.

Ecology Action v. *United States Atomic Energy Commission*, 492 F.2d 998, 1002 (2nd Cir. 1974).

Against this background, the rationale of *Vermont Yankee* and *Shoreham* becomes plain. The proper evaluation of the environmental consequences of the uranium fuel cycle, initially raised in the *Vermont Yankee* adjudication, was not a matter capable of simple resolution. It necessar-

ily encompassed considerations far transcending the operation of a single nuclear power generator in New England. Its resolution required knowledgeable examination into industry-wide and nation-wide problems and policies relating to mining, processing, storing, transporting and ultimately disposing of uranium fuel. Indeed, as noted in *Vermont Yankee,* full information respecting some of these questions had not at that time been developed much less explored. 4 AEC at 938. The uranium fuel cycle issue was thus particularly appropriate for resolution by the Commission in a rulemaking proceeding. In context, our observations in *Vermont Yankee* about the availability of that procedure (*e.g.,* 4 AEC at 937) must be understood as anticipative, although notice that the Commission was about to embark on rulemaking to consider the environmental effects of the uranium fuel cycle was not announced formally until a few months thereafter. 37 *F.R.* 24191. Our consideration in adjudicatory proceedings of issues presently to be taken up by the Commission in rulemaking would be, to say the least, a wasteful duplication of effort.

In short, the *Vermont Yankee* line of cases stands for the proposition that licensing boards should not accept in individual license proceedings contentions which are (or are about to become) the subject of general rulemaking by the Commission. If this was only implicit in the *Vermont Yankee* opinion (4 AEC 930), it was explicitly articulated in the cases which followed. See, *e.g., Shoreham, supra,* ALAB-99, RAI-73-2 at 55-56, and *Vermont Yankee Nuclear Power Corporation* (Vermont Yankee Nuclear Power Station), ALAB-179, RAI-74-2, 159 at 163-164 (February 28, 1974).[11]

3. In the absence of rulemaking on a generic issue, the Commission's regulations implementing NEPA contemplate exploration of those issues (absent some specific direction to do otherwise). Since the uranium fuel cycle rulemaking proceeding is over, licensing boards may no longer invoke *Vermont Yankee* and its progeny in individual licensing proceedings to justify disregard of contentions respecting that cycle's environmental consequences. The question thus is how should licensing boards now factor in fuel cycle considerations in carrying out the responsibility the Commission has placed upon them to weigh the benefits against the environmental costs in determining whether a given construction permit should be issued. 10 C.F.R. Part 50, App. D., § A.11 (1974 rev.). New subsection 15 affords the answer. It provides in pertinent part (10 C.F.R. Part 50, App. D., § A.15):

> (a) In applicant's environmental reports and the Commission's detailed statements for light-water-cooled nuclear power reactors, the contribution of the environmental effects of . . . uranium fuel cycle activities to the environmental costs of licensing the nuclear power reactor, shall be as set forth in the following Table S-3 of the Commission's "Environmental Survey of the Uranium Fuel Cycle." No further discussion of such environmental effects shall be required.
>
> (b) This section does not apply to any applicant's environmental report submitted pursuant to section 4 prior to June 6, 1974, or to any Final Environmental Statement for which a Draft Environmental Statement had been circulated for comment prior to June 6, 1974.
>
> *Effective date.* The foregoing amendment is effective on June 6, 1974.

In essence, subsection 15 assigns particular values to the adverse enviromental effects of the uranium fuel cycle. As we noted above, it directs that those values be reflected in future cost/benefit analyses in each applicant's environmental report and in the Final Environmental Statement

[11] We note that the applicant has so understood the later decisions. Applicant's Brief in Opposition to the Appeal of Mr. Reitze, p. 7.

on each project. True, subsection 15(b) exempts from that obligation environmental reports submitted prior to June 6, 1974 or those Final Environmental Statements for which Draft Environmental Statements had been circulated before that date. The new rule does not, however, purport to effect the Licensing Board's own obligation to strike an independent cost/benefit analysis which, as the rulemaking on the subject is over, includes consideration of uranium fuel cycle factors. Our reading of subsection 15 is that, in those cases where the applicant and staff need not include evaluation of fuel cycle factors in their submissions, the Licensing Board must nevertheless weigh those factors in the balance in determining whether the construction permit should be issued.

At oral argument, we put forward this interpretation of subsection 15 for consideration by the parties. Both the applicant and the staff questioned its correctness. We were told by them that, as employed in the subsection, the term "Final Enviromental Statement" must be taken as referring to that Statement as it might be modified by the Licensing Board (or this board) after hearing pursuant to subsection 11 of the Commission's NEPA regulations (10 C.F.R. App. D., § A.11 (1974 rev.))—and not just to the Statement as prepared by the staff and placed into evidence. On this thesis, the applicant and staff proceed to the conclusion that, because a Draft Statement was circulated for comment prior to June 6th, subsection 15(b) negates any requirement to take any account of adverse enviromental factors attributable to the uranium fuel cycle in this case.

Elementary canons of statutory construction require us to reject this reading of the regulations. First, it runs counter to the normal assumption that words in a rule are intended to be accorded their ordinarily accepted meaning.[12]

[12] *Banks* v. *Chicago Grain Trimmers Association*, 390 U.S. 459, 465 (1968); *Rucker* v. *Wabash R.R.*, 418 F.2d 146, 149 (7th Cir. 1969).

It is too late in the day to contend that "Final Environmental Statement" refers to anything other than the documents expressly so labeled and submitted by the Director of Regulation in every case. The courts themselves have accepted that meaning in light of Commission practice. See *Union of Concerned Scientists* v. *A.E.C., supra,* —— F.2d at ——, 6 ERC at 1713."

Second, it would carve from pending proceedings a class of cases in which the environmental effects of the uranium fuel cycle, though quantified by the Commission, must be ignored without any substantial reason for doing so. (Indeed, with commendable candor, staff counsel informed us that "it might not take us more than 30 minutes" to demonstrate to a licensing board how the factors in the new rule affect the cost/benefit analysis in this or other pending cases. (App. Tr. 61).

Third, although the adverse environmental consequences of the fuel cycle attributable to individual nuclear generating plants are small, they are not without any weight. Staff counsel conceded in argument that in a close situation they might throw the cost/benefit balance against issuing a construction permit. (App. Tr. 45). This opens the distinct possibility that construction permits would be vulnerable to judicial challenge under NEPA if issued after hearings which did not take relevant and potentially significant adverse environmental factors into account.[14] Interpretations which might render regulations contrary to statutory requirements are obviously to be avoided where some other legally permissible construction is possible.[15]

[13] "The Commission's regulations implementing the National Environmental Policy Act require the Director of Regulation to prepare a final detailed environmental impact statement (FES) prior to the issuance of a license." *Ibid.* See 10 C.F.R. Part 50, App. D., § A.8 (1974 rev.).

[14] *Calvert Cliffs' Coordinating Comm.* v. *A.E.C.*, 449 F.2d 1109, 1115 (D. C. Cir. 1971).

[15] *Cf., United States* v. *Brown*, 483 F.2d 1314, 1317 (D. C. Cir.,

Finally, the history of the rule does not support the suggestion that the Commission intended to leave a gap through which some pending applications might pass free of all consideration of the environmental effects of the uranium fuel cycle. To be sure, the Commission did exempt certain reports and statements from including those factors in their cost/benefit analyses. But that is a far cry from modifying the Licensing Board's obligations to consider environmental matters, which appear in an entirely separate part of Appendix D. Particularly in light of the admonitions in the *Calvert Cliffs'* decision,[16] the proximate cause for imposing such obligations on the licensing boards, we are unwilling to assume the Commission intended to restrict the Board's environmental review function without saying so expressly.

We agree with staff counsel that the Commission desired an orderly transition period prior to full application of the new rule. But all that was intended was avoiding the burden in time and expense of reprinting enviromental reports and Draft Statements submitted or circulated before the rule's effective date. The baby need not be thrown out with the bath water to accomplish that result. Rather, that intendment can be accomplished simply by reading subsection 15(b) as requiring the licensing boards to put in the balance the values specified in subsection 15(a) in making their independent cost/benefit analyses even where the applicant and the staff need not do so. This interpretation flows naturally from the choice of wording selected by the Commission and avoids a construction which might render the regulation contrary to the mandates of the National Environmental Policy Act. And while the environmental reports and statements need not be amended to include those factors,

1973); *United States* v. *Thompson*, 452 F.2d 1333, 1337 (D. C. Cir. 1971), certiorari denied, 405 U.S. 998 (1972).

[16] 449 F.2d 1190 (D. C. Cir. 1971).

nothing in the new regulation precludes parties from assisting licensing boards in carrying out this responsibility.[17]

IV

We have concluded that the environmental consequences of the uranium fuel cycle must be taken into consideration in this proceeding to the extent contemplated by subsection 15. It follows that Mr. Reitze would be entitled to intervene at least to contend that the factors contained in the new rule tip the balance against issuing a permit to construct the Douglas Point nuclear facility.[18] In a post-argument letter (served on all parties) responding to a question posed by the Board at oral argument, however, Mr. Reitze informed us that he does not desire to intervene for that limited purpose. Rather he wishes to go behind the environmental costs quantified by the Commission in the new rule to test their validity. He stresses that those figures have never been givn "a suitable NEPA examination" and questions how they can be used to preclude a NEPA examination here as they were themselves developed without an environmental impact statement.

Mr. Reitze may be correct about these and other matters mentioned in his letter. Nevertheless the fact remains that the environmental values assigned in Table S-3, which is incorporated into subsection 15, reflect the Commission's considered evaluation and quantification of the adverse environmental effects of the uranium fuel cycle attributable to individual reactors. The figures were developed in public

[17] We note that applicant's counsel, after a discussion at oral argument of the factors just mentioned, stated that applicant "would be perfectly happy to have the Licensing Board take that Table S-3 [from the new regulation] into its cost/benefit consideration . . ." (App. Tr. 37).

[18] See *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-107, RAI-73-3, 188, 194 (March 29, 1973).

rulemaking proceedings convened by the Commission specifically to consider such matters. 37 *F.R.* 24191 (1972). They form an integral part of the new regulation. To go behind them and challenge the basis on which they rest is in effect a challenge to the regulation itself. It may well be that these values rest on unfirm footing. The Licensing Board, however, is not the proper forum for consideration of such matters. The Commission's regulations provide that "any rule or regulation of the Commission, or any provision thereof, . . . shall not be subject to attack . . . in any adjudicatory proceeding involving initial licensing . . ." 10 C.F.R. § 2.758 (1974 rev.).[19] We therefore may not permit him to intervene for the purposes he desires. See *Vermont Yankee Nuclear Power Corporation* (Vermont Yankee Nuclear Power Station), ALAB-138, RAI-73-7, 520, 528 (July 31, 1973), and *Union of Concerned Scientists* v. *A.E.C., supra,* —— F.2d at ——, 6 ERC at 1716-1719.

This conclusion neither leaves Mr. Reitze without a remedy nor his contentions without a forum. It merely means that he must present those arguments to persons authorized to entertain them, in this case the Commission itself. See 10 C.F.R. § 2.800-07 (1974 rev.). Mr. Reitze's letter indicates that he believes this requirement may prevent his contentions from being considered on the merits before the Douglas Point facility is completed. If this is so it is a problem at least partly of his own creation. Mr. Reitze could have participated in the Commission's rulemaking proceeding from which the regulation in question but recently emerged. Instead he chose to enter this individual construction permit case. His failure to acquaint himself with the proper channels through which to present his contentions is likely attributable to his acting before obtaining proper advice. The Commission's rule regarding challenges to regulations are both clear and published, as are our decisions under them. Mr. Reitze resides in Washington; we can state with some confidence that the local bar is not short of counsel familiar with AEC procedures. Even the briefest consultation should have sent Mr. Reitze along the correct avenue for such relief as may have been warranted. Mr. Reitze has a perfect right to appear in these proceedings *pro se* and his argument before us would have done credit to an experienced advocate. Nonetheless, his election to proceed without counsel does not enlarge the jurisdiction of the Licensing Board to entertain contentions reserved by the Commission for its exclusive consideration.

[19] Mr. Reitze disavowed at oral argument any suggestion that there might be "special circumstances" applicable to the particular facility under construction here, the only exception to the rule.

Consequently, as Mr. Reitze represents that he does not wish to participate in the proceeding to the extent permitted under the Commission's rules, and as the issue he wants to litigate is outside the Licensing Board's jurisdiction, he leaves us no choice with respect to the decision below denying his intervention other than to *affirm.*[20]

It is so ORDERED.

FOR THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

MARGARET E. DUFLO
Secretary to the Appeal Board

[20] That Mr. Reitze has not been permitted to intervene for reasons personal to himself does not relieve the Licensing Board from its obligation to factor into its cost/benefit analysis the values assigned in Table S-3 of subsection 15(b).

FEDERAL REGISTER, VOL. 37, NO. 221—
WEDNESDAY, NOVEMBER 15, 1972

ATOMIC ENERGY COMMISSION

[10 CFR Part 50]

Environmental Effects of the Uranium Fuel Cycle

NOTICE OF PROPOSED RULE MAKING

Notice is hereby given that the Atomic Energy Commission is considering possible amendments to its regulations in 10 CFR Part 50, Appendix D, "Interim Statement of General Policy and Procedure: Implementation of the National Environmental Policy Act of 1969 (Public Law 91-190)," that would specifically deal with the question of consideration of environmental effects associated with the uranium fuel cycle in the individual cost-benefit analyses for light water cooled nuclear power reactors.

The Commission's regulation implementing the National Environmental Policy Act of 1969 (NEPA) in 10 CFR Part 50, Appendix D, requires that each draft and final detailed statement prepared pursuant to section 102(2)(C) of NEPA for a nuclear power reactor contain a cost-benefit analysis which, among other things, considers and balances the adverse environmental effects and environmental, economic, technical, and other benefits of the facility. This regulation further provides that the cost-benefit analysis will, to the fullest extent practicable, quantify the various factors considered.

In several nuclear power reactor licensing proceedings it has been argued that the cost-benefit analysis for the facility that is the subject of the licensing action should include costs and benefits associated with the uranium fuel cycle, such as environmental effects of reprocessing spent fuel and disposal of wastes resulting from reprocessing.

Other factors related to the fuel cycle include those associated with uranium mining and milling, uranium hexafluoride production, isotopic enrichment, fuel fabrication, and transportation associated with the above. It has been urged that in each power reactor case the contribution of the nuclear power reactor to the environmental costs associated with the fuel cycle activity should be ascertained and considered in the cost-benefit balance.

The Commission's Atomic Safety and Licensing Appeal Board has held that environmental impact statements for nuclear power reactors should consider, among other things, environmental effects of the transportation of irradiated nuclear fuel from the facility that is the subject of the licensing action, and the transportation of low level wastes and of high level solid wastes other than irradiated fuel from the facility to depositories, but should not consider environmental effects of reprocessing of irradiated nuclear fuel, the disposal of wastes resulting from reprocessing, or disposal of low and high level solid wastes. In the matter of Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), Docket No. 50-271, Memorandum and Order, June 6, 1972. Subsequently, the Appeal Board in that case held that mining and manufacturing of reactor fuel are not within the scope of the environmental review prescribed for nuclear power reactors by NEPA and the Commission's regulations (Decision, October 11, 1972).

In connection with the foregoing, it should be noted that in conjunction with the revision of Appendix D of 10 CFR Part 50 on September 9, 1971, there was transmitted by the Director of Regulation to applicants for licenses to construct or operate nuclear power plants, and made available to the public, a document dated September 1, 1971, which, among other things, indicated that applicants' environmental reports should describe the environmental effects of the transportation of fuel elements from the fuel fabrication plant to the reactor as well as the transportation of spent

fuel elements from the reactor to the fuel reprocessing plant and the transportation of packaged radioactive material from the reactor to low level waste burial grounds.

There are in the United States well over 100 nuclear power reactors in operation, under construction, or on order, and, in addition, three commercial nuclear fuel reprocessing facilities have received operating licenses or are under construction. The existence of a uranium mine or mill, uranium hexafluoride plant, enrichment facility, fuel fabrication plant, fuel reprocessing plant, or ultimate waste depository does not depend upon the licensing of any one nuclear power reactor, nor does the cold or irradiated fuel or waste from any one reactor make more than a fractional contribution, if any, to the effects of such activities or facilities. Uranium mining and milling, uranium hexafluoride production, isotopic enrichment, and fuel fabrication will contribute fuel to many nuclear reactors and the effects associated with fuel reprocessing and waste disposal will be those associated not only with nuclear power reactors now operating or under construction, but also with those that are no longer in operation and those that are planned for the future. There does not appear to be any way to ascertain with any degree of certainty which of the uranium mines or mills, uranium hexafluoride plants, isotopic enrichment facilities, and fuel fabrication plants in existence or to be operated in the future will contribute fuel to a given nuclear power reactor, or which of the various fuel reprocessing plants or commercial burial grounds now in existence or to be constructed from time to time will receive irradiated fuel or wastes from any given nuclear power reactor.

Many of the various elements in the nuclear fuel cycle involve varying methods or processes with different environmental and other effects and there is no reason to believe that during the useful life of any given nuclear power reactor other methods or processes with different effects will not be developed. In addition, effects of uranium mill-

ing and mining, uranium hexafluoride production, fuel elements fabrication, spent fuel reprocessing, operation of licensed burial grounds, and transportation incident to each of the above, are, except as those activities are subject to agreement State jurisdiction, the subject of Commission NEPA review proceedings associated with issuance of materials or facility licenses that are separate from the review proceedings for issuance of licenses for nuclear power reactors.

Cost-benefit analyses of nuclear power reactor license applications should contain a full and frank disclosure and consideration of costs and benefits of the proposed action. The results of the application of this principle to the question of inclusion of environmental effects associated with the fuel cycle are not entirely clear. As the above discussion indicates, the fractional contribution, if any, of the environmental effects of the fuel cycle to the cost-benefit balance for a particular nuclear reactor is difficult, and may be impossible, to ascertain with any degree of certainty. This suggests that such matters, if they are to be considered at all, be considered in a generic fashion through the rule making process. The Commission's regulatory staff has prepared a report entitled "Environmental Survey of the Nuclear Fuel Cycle," dated November 6, 1972, which provides a basis for an informed consideration of the generic question of the environmental impact associated with the uranium fuel cycle in light water cooled nuclear power reactor licensing proceedings.

To aid the Commission in its consideration of possible amendments to Appendix D to 10 CFR Part 50 of its regulations that would deal with the question of the account to be taken of the environmental effects associated with the uranium fuel cycle in individual cost-benefit analyses for light water-cooled nuclear power reactors, interested persons are invited to submit comments and suggestions, together with relevant data and information, with respect to

possible additions to 10 CFR Part 50 along the following alternative lines:

(1) In the case of light water-cooled nuclear power reactors, the applicant's environmental report and the Commission's detailed statement shall contain a full discussion of, inter alia, the environmental effects of the transportation of cold fuel to the reactor and irradiated fuel from the reactor to a fuel reprocessing plant and the transportation of low level waste and high level solid wastes (other than irradiated fuel) from the reactor to depositories. Those documents need not cover the environmental effects of uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, reprocessing of irradiated fuel, disposal of low level and high level solid wastes or transportation related to such activities (other than transportation of cold fuel to, and irradiated fuel from, the reactor), since the environmental effects of those activities as related to a particular light water-cooled nuclear power reactor have been analyzed in the Commission's "Environmental Survey of the Nuclear Fuel Cycle" and, when factored into the cost-benefit analysis, are sufficiently small as not to affect significantly the resultant conclusion. The environmental effects of the latter activities will generally be considered in detail in proceedings in which approval for such activities, or closely related activities, is sought.

(2) Or in the case of light water-cooled nuclear power reactors, the applicant's environmental report and the Commission's detailed statement shall contain a full discussion of, inter alia, the environmental effects of the transportation of cold fuel to the reactor and irradiated fuel from the reactor to a fuel reprocessing plant and the transportation of low level wastes and high level solid wastes (other than irradiated fuel) from the reactor to depositories. In such documents, the contribution of the environmental effects of uranium mining and milling, the production of uranium

hexafluoride, isotopic enrichment, fuel fabrication, reprocessing of irradiated fuel, transportation and disposal of wastes resulting from such reprocessing, disposal of low level and high level solid wastes and transportation related to such activities (other than transportation of cold fuel to, and irradiated fuel from, the reactor), to the environmental costs of licensing the nuclear power reactor, shall be as set forth in the following Table S-3 of the Commission's "Environmental Survey of the Nuclear Fuel Cycle":[1]

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[1] The "Environmental Survey of the Nuclear Fuel Cycle" provides the supporting data for this summary table.

TABLE S-3.—*Summary of environmental considerations for uranium fuel cycle.*

[Normalized to model LWR annual fuel requirement]

Natural resource use	Total	Effluents—chemical (MT):	Total
Land (acres):		**Gases (including entrainment):**[1]	
Temporarily committed	63	SO_x	4,400
Undisturbed area	45	NO_x[2]	1,170
Disturbed area	18	Hydrocarbons	11.3
Permanently committed	4.6	CO	28.7
Overburden moved ($MT \times 10^{-6}$)	2.7	Particulates	1,156
Water (gallons$\times 10^{-6}$):		**Other gases:**	
Discharged to air	163	F^-	1.0
Discharged to water bodies	11,052	**Liquids:**	
Discharged to ground	123	SO_4^-	5.8
Total	11,338	NO_3	8.2
Fossil fuel:		Fluoride	0.4
Electrical energy (mw.-hr.$\times 10^{-3}$)	317	Ca^+	5.4
Equivalent coal ($MT \times 10^{-3}$)	116	Cl^-	8.2
Natural gas (s.c.f.$\times 10^{-6}$)	103	Na	13.5
		NH_3	8.4
		Fe	0.4
		Tailings solutions ($\times 10^{-3}$)	240
		Solids	91,000

Effluents—Radiological (curies)	Total	Maximum effect per annual fuel requirement of model 1000 WMe LWR
Gases (including entrainment):		Principally from mills—Maximum annual dose rate <4 percent of average natural background within 5 miles of mill. Results in 0.06 man-rem per annual fuel requirement. Due to dilute concentration and short half-life of principal component, exposure beyond a 5-mile radius is miniscule relative to natural background.
Rn-222	83	
Ra-226	.02	
Th-230	.02	
Uranium	.046	
Tritium ($\times 10^{-3}$)	12	
Kr-85 ($\times 10^{-3}$)	350	
I-129	.002	
I-131	.02	
Fission products	1.0	
Transuranics	.004	
Liquids:		Principally from fuel reprocessing plant—Whole body dose is 4.4 man-rem for population within 50-mile radius. This is <0.005 percent of average natural background dose to this population.
Uranium and daughters	2.4	
Ra-226	.027	Principally from milling—included in tailings liquor and returned to ground—no effluents; therefore, no effect on environment.
Th-230	.27	
Th-234	.001	From UF_6 production—concentration <5 percent of 10 CFR 20 for total processing of 27.5 model LWR annual fuel requirements.
Other uranium daughters	.001	
Ru-106	4	From fuel fabrication plants—concentration <1 percent of 10 CFR 20 for total processing 26 annual fuel requirements for model LWR.
Tritium ($\times 10^{-3}$)	6.2	
Solids (buried):		From reprocessing plants—maximum concentration <4 percent of 10 CFR 20 for total reprocessing of 26 annual fuel requirements for model LWR.
Other than high level	1,200	
Thermal (B.t.u. $\times 10^{-9}$)	3,370	From mills—included in tailings returned to ground—no significant effluent to the environment.

[1] Estimated effluents based upon combustion of equivalent coal for power generation.
[2] 1.2 percent from natural gas use and process.

The Commission will hold an informal rule-making hearing on possible amendments described in (1) and (2) above on February 1, 1973, at 10 a.m. The location and the presiding officer will be designated in a notice that will be published in the FEDERAL REGISTER in the near future.

Interested persons are invited to attend the hearing and present oral or written statements. Any person who intends to present views at this hearing should furnish in writing his name and the name of the organization he represents to the Secretary of the Commission by January 1, 1973. The hearing will be conducted as a legislative-type hearing. Since the hearing will be part of a rule making, rather than an adjudicatory, proceeding, the provisions of Subpart G. "Rules of General Applicability," of 10 CFR Part 2, the Commission rules of practice, will not be applicable.

Nothing herein shall be construed as affecting the continuing validity of the above-described holdings by the Appeal Board in the Vermont Yankee proceeding during the course of this rule making proceeding, and they shall continue in effect unless and until modified by promulgation of a regulation or other Commission action.

All interested persons who desire to submit written comments or suggestions in connection with the possible amendments to Appendix D of 10 CFR Part 50 or the "Environmental Survey of the Nuclear Fuel Cycle," should send them to the Secretary of the Commission, U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Chief, Public Proceedings Staff, within sixty (60) days after publication of this notice in the FEDERAL REGISTER.

Copies of comments on this notice as well as the "Environmental Survey of the Nuclear Fuel Cycle," dated November 6, 1972, may be examined at the Commission's Public Document Room at 1717 H Street N.W., Washington, DC 20545. In addition, copies of the environmental survey may be obtained upon request addressed to the Dep-

uty Director for Fuels and Materials, Directorate of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545.

(Sec. 161, 68 Stat. 948; sec. 102, 83 Stat. 853, 42 U.S.C. 2201, 4332)

Dated at Germantown, Md., this 10th day of November 1972.

For the Atomic Energy Commission.

PAUL C. BENDER,
Secretary of the Commission.

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FEDERAL REGISTER, VOL. 41, NO. 159—
MONDAY, AUGUST 16, 1976

[Docket RM-50-3]

Environmental Effects of the Uranium Fuel Cycle

GENERAL STATEMENT OF POLICY

Two recent decisions by the United States Court of Appeals for the District of Columbia Circuit raise significant questions regarding the future course of Commission licensing activities over the coming months. The decisions are *Natural Resources Defense Council, et al.* v. *NRC,* Nos. 74-1385 and 74-1586; and *Aeschliman, et al.* v. *NRC,* Nos. 73-1776 and 73-1867 (July 21, 1976). The purpose of this policy statement is to indicate how the Commissions intends to conduct its licensing activities pending resolution of the several legal questions raised by the decisions. This statement is not intended to resolve, or indicate any resolution of, the question whether the particular licenses before the court in these cases are to be continued, modified, or suspended during the proceedings called for; since the court refused an explicit request to set aside these licenses, the Commission's view is that the court expects it to resolve this question in formal proceedings, in light of the facts and the applicable law. Nor is this statement intended to reflect any position the Commission may take in further litigation in these cases.

As this statement was in the final stages of preparation, the Commission received a proposal for rulemaking from the Natural Resources Defense Council concerning many of the issues discussed herein. Comments on that proposal are solicited in a coordinate FEDERAL REGISTER notice, also published today. Initial consideration of the petition indicates that it varies in several respects from this policy statement. Some of these variations (notably, rules proposed for existing construction permits, LWA's and operating licenses)

may reflect differing legal interpretations; however, in general, publication of the present policy statement will not irretrievably commit the Commission or others to a course inconsistent with the proposals made. The Commission believes that the need for immediate guidance to its staff and licensing boards, and to the interested public, requires publication of the present statement. The Commission will carefully consider the suggestions of the NRDC and, indeed, is aware that others should have the opportunity to comment on these proposals and to offer suggestions for implementing the recent court of appeals decisions.

While other questions were decided, the principal impact of the court's opinions on Commission actions arises from holdings on three related points:

1. A rule adopted by the former AEC in 1974 to codify the environmental effects of the uranium fuel cycle for individual light-water nuclear power reactors, 10 CFR 51.20(e), was inadequately supported insofar as it treated the reprocessing of spent fuel and of radioactive wastes;

2. The National Environmental Policy Act of 1969 requires analysis of these reprocessing and waste issues, either through rulemaking or in individual licensing proceedings, as a prerequisite to Commission licensing of a nuclear power plant;

3. If the Commission wishes to revise its rule, it must do so by procedures more demanding than the notice-and-comment procedures required for informal rulemaking by the Administrative Procedure Act. (The court divided 2-1 on the question of further procedures, Judge Tamm stating that notice-and-comment procedures would suffice.)

Even though review of one or more of these rulings may be sought, prudent and responsible regulation requires immediate steps to further analyze the reprocessing and waste disposal issues. Accordingly, the Commission's staff has

been directed to review the existing literature thoroughly and to produce on an expedited basis a revised and adequately documented environmental survey on the probable contribution to the environmental costs of licensing a nuclear power reactor that is attributable to the reprocessing and waste management stages of the uranium fuel cycle. It is expected that this statement will be ready on or about September 30, 1976.

The Commission intends to reopen the rulemaking proceeding on the Environmental Effects of the Uranium Fuel Cycle, Docket RM-50-3 for the limited purposes of:

1. Supplementing the record on the reprocessing and waste management issues; and

2. Determining whether or not on the basis of the supplemented record, Table S-3 of 10 CFR 51.20(d) should be amended and, if so, in what respect.

The revised environmental survey just described, together with any amendments to Table S-3 that may be proposed as a consequence of that analysis, will be the basis for these reopened proceedings. We understand the court to regard the procedures originally used as capable of fully ventilating the issues involved, permitting a reasoned Commission discussion and producing a valid rule.[1] These procedures, which included an oral hearing and questioning of

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[1] The court understood, as do we, that any such rule would be but one step in national planning for radioactive waste management. The Energy Research and Development Administration has undertaken a comprehensive environmental impact statement, now scheduled for issuance in draft form in April, 1977. A variety of other measures, including this agency's development of goals, objectives, and general environmental criteria for waste management, are also under way. As the Commission then proceeds to develop its regulatory framework for waste management, appropriate environmental impact statements will be prepared. Obviously, areas of uncertainty which may be developed by the present study will help to shape these efforts.

witnesses by the presiding panel, are set forth at 38 Fed. Reg. 50, January 30, 1973. Alternative procedures, modeled on those to be employed by the Commission in its forthcoming GESMO hearings, have been suggested by the National Resources Defense Council in the petition for rulemaking referenced above. An election of procedures to be followed will be made in a forthcoming notice of hearing, following the comment period on that petition, which closes August 31, 1976.

While the extended rulemaking is in progress, the Commission and its licensing boards will be called upon to decide whether nuclear reactor licenses can issue, and whether previously granted licenses should be suspended, modified, or set aside.

In view of the court's recent decisions, the Commission has concluded that no new full-power operating license, construction permit or limited work authorization should be issued pending the developments to be described below. This conclusion is based on recognition that the grant of each of those authorizations, permits, or licenses is premised upon the completion of an adequate environmental impact statement, and that under the subject decisions, absent an acceptable substitute for those portions of Table S-3 which the court has found inadequately supported, the basis for a complete environmental impact statement will not be in place.

The Commission recognizes that this conclusion may have significant impacts on the availability and costs of nuclear power facilities. At present, two nuclear power plants are at the stage where an operating license might otherwise have been issued imminently; two plants will reach that stage within the next four months. Additionally, a decision on whether to issue construction permits for five power plants would in all probability have been reached by the end of the year. The number of plants affected by a cessation of licensing grows with time, and there are obvious

costs incurred when plants stand idle. Since existing concepts for reprocessing and waste technology do not vary significantly with the design of nuclear power generating facilities, it is extremely unlikely that the revised environmental survey will result in any modification of these facilities. Only the possibility of discontinuing their construction or use is likely to be at issue.

The Commission does not believe that the licensing constraints here announced must necessarily continue until a rulemaking employing oral hearing procedures has been completed, a process which could take fully a year. If the revised environmental survey justifies, notice and comment rulemaking can provide the basis for an interim rule which would be an adequate substitute for Table S-3 pending issuance of the final rule. In addition to the revised environmental survey, the basis for such an interim rule would include an evaluation of the environmental impact of using that interim rule as a basis for licensing until the final rule is in place, and an assessment of the impact of a suspension of further licensing during that time period. The Commission has directed its staff to develop this information by September 30, 1976. Since interim rulemaking would be accomplished through notice and comment procedures only, an interim rule might be promulgated as early as December 1976, providing a basis for licensing at that time.

The Commission also has under consideration the possibility of a future request to the court of appeals for a stay of its mandate, such a request to be explicitly supported by an appraisal of the likely impact of the court's decision and of granting the stay. If granted, a stay so supported might also provide the basis for resumed licensing.

Finally, some Commission licensing actions do not require preparation of an environmental impact statement, depending upon the circumstances. See 10 CFR 51.5(b). In these instances, which may include authorizations for fuel

loading, low-power testing, or amending a construction permit, the Commission's regulations require that an environmental impact appraisal be undertaken in order to determine whether an environmental impact statement must be prepared. 10 CFR 51.5(c). The absence of an effective Table S-3 would not preclude licensing that is not dependent upon an environmental impact statement. Consequently the Commission is instructing its staff and licensing boards that they may continue to take such actions where an environmental impact assessment has been made and has resulted in a determination that no environmental impact statement need be prepared. See 10 CFR 51.5, 51.7.

In all other instances, the staff and the licensing boards shall continue to process applications and hold hearings up to the point of, but not including, licensing. However, in any contested proceeding, reprocessing and waste management issues should be deferred pending completion of the interim rulemaking, unless the evidentiary record on those issues has already been completed and is adequate for decision. The Commission wishes to avoid the needless duplication which proceeding both by rulemaking and in individual contested licensing hearings would entail and the overall delay that would result. Where a proceeding is uncontested, licensing shall nevertheless be deferred until the Commission has published the revised environmental survey, documenting the probable contribution to the environmental costs of licensing a nuclear power reactor which is attributable to the reprocessing and waste management stages of the uranium fuel cycle. These values may then be used in reaching a NEPA cost/benefit assessment prerequisite to licensing. Similarly, where a license has been issued, but the action has not become final within the Commission because of pending appeal or possible Commission review, final action or review should be deferred pending publication of the environmental survey; other issues, including as appropriate the issue of suspending activity under the license question, may be resolved in the interim.

With regard to the Vermont Yankee and Midland licenses at issue in the two court of appeals cases, we agree with the view expressed by the Commission's staff that questions of modification or suspension should be resolved in formal proceedings in light of the facts and the applicable law. Since we have decided that reprocessing and waste management issues should be treated generically by rulemaking rather than on a case-by-case basis, the initial question on remand of the Vermont Yankee and Midland orders will be whether the licenses should be continued, modified, or suspended until an interim rule has been made effective. In resolving this question, the Commission intends to assign the matter to licensing boards with instructions to call for briefs from the parties followed by evidentiary hearings if necessary.[2] The same question would arise on a request for a show cause order seeking the suspension or modification on fuel cycle rule grounds of any other nuclear power plant license.

It is the Commission's understanding that resolution of this question turns on equitable factors well established in prior practice and case law. Such factors include whether it is likely that significant adverse impact will occur until a new interim fuel cycle rule is in place; whether reasonable alternatives will be foreclosed by continued construction or operation; the effect of delay; and the possibility that the cost/benefit balance will be tilted through increased investment. See *Coalition for Safe Nuclear Power* v. *AEC*, 463 F.2d 954 (D.C. Cir. 1972); San Onofre, Units 2 and 3, 7 AEC 986, 996-97 (June 1974). General public policy concerns, the need for the project, the extent of the NEPA violation, and the timeliness of objections are also among the pertinent considerations. See, e.g., *Conservation Society of Southern Vermont Inc.* v. *Secretary of Transportation*, 403

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[2] An evidentiary hearing on other issues will be required in Midland, barring further review. That hearing, however, should not be commenced until the Midland decision has become final.

F.2d 927, 933-934 (2d Cir. 1974), vacated on other grounds and remanded, 423 U.S. 809 (1975); *Greene County Planning Board* v. *FPC*, 455 F.2d 412, 424-425 (2d Cir.), cert. denied, 409 U.S. 849 (1972); *City of New York* v. *United States*, 337 F.Supp. 150, 163 (E.D.N.Y.) (three-judge court).[3]

[3] In its petition for rulemaking, noticed today, the Natural Resources Defense Council suggests that the appropriate course for the interim period concerning facilities which hold effective licenses should be as follows:

Facilities which received operating licenses before July 21, 1976. NRC will order suspension of the operating license for any such facilities unless the licensee can establish that:

(1) Continued operation of the plant is essential to maintain a reliable supply of energy to the reliability region of which the plant is a part, taking into account alternative available sources of supply (including purchase power), historical reserve requirements, and available interconnections for transmitting power;

(2) Continued operation of the facility will provide adequate protection for the public health and safety, taking into account the health and safety problems associated with production, storage, transportation, reprocessing, if any, and management or disposal of all nuclear fuel required for the plant and all nuclear wastes produced by the plant;

(3) Continued operation of the facility will not tend to foreclose, now or in the future, implementation of alternatives to the operation of this facility or to the design, construction or operation of other facilities which may be considered following completion of the review required by 10 CFR Section ——; and

(4) Continued operation of the facility will not tend to irretrievably commit resources to the production of nuclear fuel or the storage, reprocessing, if any, management or disposal of any nuclear wastes.

Facilities which received construction permits or LWA's prior to July 21, 1976. NRC will order suspension of the LWA or the construction permit unless the license can establish that:

(1) Continued construction of the plant is essential to maintain a reliable supply of energy to the reliability region of which the plant is a part, taking into account alternative available sources of supply (including purchase power), historical reserve requirements and available interconnections for transmitting power;

(2) Continued construction will not tend to foreclose, now or in the future, implementation of alternatives to the design, construction or operation of this or other facilities which alternatives may be considered following completion of the review required by 10 CFR ——; and

(3) Continued construction will not tend to irretrievably commit resources to the facility.

As noted in the text immediately following this note, we believe the appropriate time for NRC consideration of sua sponte, across-the-board initiation of show cause proceedings to be when it has received from its staff its revised and documented assessment of the reprocessing and waste management issues. While the issues of reprocessing and waste management fully warrant serious and timely attention, no information now at hand calls for so drastic a step in the brief period before this analysis will be available. Also, while the individual factors NRDC suggests are among those relevant to be addressed in seeking a show cause order or in any show cause proceeding, the Commission cannot accept the suggestion that these factors are cumulative and must each be satisfied; its own approved prior practice and established judicial precedent permit balancing of these factors to determine where the equities of each particular case lie.

In adopting this approach, one inconsistent with the NRDC petition, the Commission is aware that neither NRDC nor other concerned parties have been formally heard. In commenting on the NRDC petition, any party interested to do so (including NRDC) may file comments addressed to the point.

Finally, even if no request for suspension of modification of an LWA, CP, or OL is received, the Commission will nevertheless determine whether it should sua sponte initiate show cause proceedings based upon information the Commission receives in the revised environmental survey. As noted earlier, this information should be in hand by September 30. The Commission's determination whether or not to reopen all licenses will then be issued.

Dated at Washington, D.C., this 13th day of August 1976.

For the Nuclear Regulatory Commission.

SAMUEL J. CHILK,
Secretary of the Commission.

FEDERAL REGISTER, VOL. 39, NO. 78—
MONDAY, APRIL 22, 1974

Title 10—Energy

CHAPTER I—ATOMIC ENERGY COMMISSION

Part 50—Licensing of Production and Utilization Facilities

ENVIRONMENTAL EFFECTS OF THE URANIUM FUEL CYCLE

On November 15, 1972, the Atomic Energy Commission published in the FEDERAL REGISTER a notice of consideration of possible amendments to Appendix D, Interim Statement of General Policy and Procedure: Implementation of the National Environmental Policy Act, 10 CFR Part 50, Licensing of Production and Utilization Facilities (37 FR 24191). The amendments proposed here supplement our established rules for fulfilling section 102(2)(C) procedures of NEPA. The amendments address the question whether to consider the environmental effects associated with the uranium fuel cycle in the individual cost-benefit analyses for light-water-cooled nuclear power reactors. The Atomic Safety and Licensing Appeal Board had earlier held that some such effects should be considered while others should not.[1]

The proposed amendments set forth two alternative approaches to considering the environmental effects associated with the uranium fuel cycle. Under the first, such environmental effects would not have to be considered in applicants' environmental reports and Commission detailed statements of environmental considerations since, if factored into individual cost-benefit analyses, they would be sufficiently small as not to affect significantly the resultant

[1] Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-56, ALAB-73 (June 6, 1972 and October 11, 1972).

conclusion. Under the second alternative, the environmental effect associated with the uranium fuel cycle, albeit small, would be factored into individual cost-benefit analyses in the form of numerical values derived from the instant proceeding. The second alternative has been adopted by the Commission as an effective rule, with certain clarifying and editorial changes. Insofar as this rule differs from the Appeal Board decisions in "Vermont Yankee" supra, those decisions have no further precedential significance. The Commission also notes that adoption of this amendment is without prejudice to consideration of whether or not a full generic environmental impact statement on the uranium fuel cycle should be issued pursuant to 10 CFR Parts 11 and 51 of the Commission's regulations.

The FEDERAL REGISTER notice announced the availability for comment of the "Environmental Survey of the Nuclear Fuel Cycle," dated November 1972, prepared by the Commission's Regulatory staff. This document was designed to serve as a primary data base for the proposed amendment and not as an analysis of alternatives and costs and benefits of the entire uranium fuel cycle. Indeed, certain portions of that overall fuel cycle are undergoing separate examination and are not involved in this proceeding. These include: (i) An environmental statement in support of a recommendation by the General Manager to continue the present program for developing Federal repositories for commercial high level wastes (38 FR 29350), and (ii) a separate rule making proceeding examining transportation of UO_2 fuel to and from light water reactors and transportation of solid wastes from such reactors to waste burial grounds (38 FR 3334).

In addition, another fuel cycle for light water reactors is under study by the staff. Typical programs underway on this subject include: (i) Preparation of a generic environmental impact statement concerning potential programs for recycling plutonium in commercial light-water reactors

(39 FR 5536), (ii) analysis of methods for disposal of wastes contaminated with plutonium, and (iii) an environmental analysis of the proposed amendment to 10 CFR 71 that would require significant quantities of plutonium to be shipped as a solid in packages providing at least double containment (38 FR 20482).

The survey described stages of the fuel cycle for the purpose of determining whether the cost-benefit analysis required by NEPA and our regulation (10 CFR Part 50, Appendix D) for environmental impact studies in licensing proceedings should include numbers quantifying effects of the uranium fuel cycle. The purpose of this proceeding was to make determinations as to whether certain elements should be factored into impact statements to be utilized in other proceedings; the purpose was not to undertake a full environmental review of the uranium fuel cycle. In short, this proceeding addresses a procedural question involving the implementation of NEPA's requirement for cost-benefit analyses in impact studies. For this reason, no environmental impact statement has been prepared in connection with the rule adopted today.

All interested persons were invited to submit written comments and suggestions in connection with the proposed amendments and the Environmental Survey within 60 days after publication of the notice in the FEDERAL REGISTER. In addition, an informal rule making hearing was held on February 1, 1973, to permit the presentation of written and oral views on the Environmental Survey and the alternative approaches to consideration of the environmental effects associated with the uranium fuel cycle.

On January 3, 1973, the Commission issued a Supplemental Notice setting forth the procedures which were to be followed in the informal rule making hearing (38 FR 50). The notice stated, among other things, that since the hearing would be part of a rule making rather than an adjudi-

catory proceeding, the provisions of Subpart G, Rules of General Applicability, of Part 2 of the Commission's rules of practice would not be applicable and that, therefore, such procedural features as discovery and cross-examination would not be utilized. The notice provided, however, that the participants in the hearing would be subject to questioning by the presiding hearing board. The notice further provided that at the conclusion of the hearing, the record was to be held open for a period of 30 days during which time any person could file supplementary written comments deemed appropriate in light of the hearing record. After the expiration of the 30-day period, the presiding hearing board, without rendering any decision or making any recommendation, was to forward the hearing transcript to the Commission together with an identification of issues raised at the hearing.

Written comments were received from 46 individuals and organizations representing Federal and State agencies, industry, public utilities, environmental and citizen groups, and private citizens. Participants in the informal rule making hearing included the Commission's Regulatory staff; the Environmental Protection Agency; the Mapleton Intervenors of Midland, Michigan; Westinghouse Electric Corporation; Consolidated National Intervenors and the Union of Concerned Scientists, jointly; the Atomic Industrial Forum; the Consolidated Utilities, composed of fourteen utilities appearing jointly; the New York State Department of Environmental Conservation; and the Minnesota Pollution Control Agency. In addition, two individual members of the public made limited appearances.

In its "Report to the Commission by the Nuclear Fuel Cycle Hearing Board," submitted on July 6, 1973, pursuant to a Supplemental Notice of Hearing published on January 3, 1973, the presiding hearing board identified a number of issues which it believed were raised at the hearing and in the written comments. The first issue identified concerned

a challenge by CNI/UCS to the procedures used by the Commission for the hearing. That participant argued that for any rulemaking hearing dealing with the environmental effects of the nuclear fuel cycle on a generic basis to be legally valid, the hearing must incorporate the same adjudicatory procedural features used in individual production and utilization facility licensing proceedings, including the rights of discovery and cross-examination. On the basis of this contention, the participant recommended adoption of a "third alternative" which would provide for an "ongoing generic hearing" requiring preparation and circulation of an environmental impact statement. Under this alternative, parties to individual reactor licensing proceedings would be permitted to participate in an "adjudicatory" rule making proceeding, the findings of which would be incorporated into the record of individual licensing hearings.

The Commission has considered this challenge to the legal validity of the present rule making proceeding and the arguments in opposition which were filed by other parties. In our view, the procedures adopted provide a more than adequate basis for formulation of the rule we adopted. All parties were fully heard. Nothing offered was excluded. The record does not indicate that any evidentiary material would have been received under different procedures. Nor did the proponent of the strict "adjudicatory" approach make an offer of proof—or even remotely suggest—what substantive matters it would develop under difference procedures. In addition, we note that all documents including the Survey were available to the parties several weeks before the hearing, and the Regulatory staff, though not requested to do so, made available various drafts and handwritten notes.[2] Under all of the circumstances, we conclude that adjudicatory type procedures were not warranted here.

[2] Some or all of these items might not have been provided under rigid adjudicatory rules. For example, on the one occasion when CNI/UCS requested a specific document, it was promptly made available, even though it was an internal staff memorandum written for the Commissioners themselves.

The second area in which issues were identified by the presiding hearing board related to the scope and depth of the underlying Environmental Survey. One issue was whether, in light of the comments in the record, substantial revision of the survey should be made prior to adoption of a final rule. Also identified was the issue of whether the Administrative Procedure Act requires reopening of the proceeding to permit comment on any revised survey and whether such reopened proceeding should be a proceeding conducted in the manner of the original proceeding in which comment would be invited on all aspects of the nuclear fuel cycle; or whether such proceeding should be limited to comment only on the revisions to the Survey.

In discussing the issues in this area, the presiding hearing board mentioned, among other things, the factors of safeguards against sabotage and diversion of nuclear materials and plutonium handling. The board also indicated that arguments had been advanced that the Survey was unreliable with respect to high level waste disposal in that facilities for such disposal are presently nonexistent.

Sabotage and diversion receive considerable attention in licensing of individual fuel cycle facilities. The issuance of any special nuclear material license involving significant quantities of such material is contingent upon a finding by the AEC that the required accountability and physical security systems are adequate to provide reasonable protection against acts of sabotage and diversion of materials. Beyond this, insofar as environmental impact is concerned, sabotage and diversion may be viewed in the context of possible contributing factors, among others, to accident conditions. The Environmental Survey does, in fact, consider a number of postulated accidents and their environmental effects. The postulated accidents thus considered in

the Survey are deemed to be a reasonable representation of the environmental effects that could result from the more credible acts of sabotage.

Those aspects of the uranium fuel cycle which involve plutonium handling, namely recovery and storage, were described in the Environmental Survey. However, other forms of plutonium handling were not discussed in the survey because the survey is applicable only to light-water-power reactors using conventional uranium dioxide fuel. Reactors utilizing plutonium recycle fuel fall outside the Survey's scope of coverage and, therefore, the values in the Summary Table are inapplicable. As stated earlier, however, the Commission is presently drafting an environmental impact statement covering all aspects of the full-scale use of plutonium in light-water reactors, including the fuel cycle.

Considerable information was presented at the hearing on high level waste storage utilizing a retrievable surface storage facility. A description was given of such facility, the normal radiological effluents, and a maximum credible accident. The estimated normal annual radiological release was 0.005 curies. Although the ultimate capacity of the facility would be about 80,000 canisters of waste, corresponding to about 8,000 annual fuel requirements (AFR), the initial capacity will be substantially less. Even if one assumed that the annual release from the facility were associated with a single annual fuel requirement, the fission product release per annual fuel requirement would be 0.005 Ci/AFR. Since the release of solid fission products and actinides from the model reprocessing plant is estimated at 1.004 Ci/AFR, the omission of waste repository effluents from the original Environmental Survey did not materially affect the releases shown in the Summary Table. However, the 0.005 Ci/AFR value has been added to the 1.004 Ci/AFR value in the Summary Table for a combined total, when rounded off, of 1.01 Ci/AFR. While such a waste storage facility has not been constructed, preliminary conceptual designs have been developed using existing technology based on well established data and techniques.

The Commission believes that the Survey and hearing record provide an adequate data base for the regulation adopted. Revisions to the chemical effluents in Table S-3 have been made to reflect corrections or suggestions entered into the hearing record on UF_6 conversion facilities, UO_2 conversion plants and mining operations. Minor corrections with respect to radioactive effluents have been made and in no case do these corrections increase the effluent effects by more than .25 percent of natural background. To conform the table precisely to the text of the Survey, the values for iodine-129 and 131 releases have been changed from .002 and .02 curies to .0024 and .024 curies, respectively. In addition, values for exposure of workers and the general public in the transportation of radioactive materials covered in the Survey have been added to the Summary Table. To incorporate these changes, to incorporate data on the retrievable surface storage facility in high level wastes described in the hearing, and to add information suggested in comments received as a part of the hearing record, the Environmental Survey has been revised and is being issued in revised form concurrently with promulgation of this amendment.[3] In view of the fact that these revisions are minor and reflect the record already developed, we see no occasion for reopening this proceeding.

A third area in which issues were identified by the presiding hearing board relates to the Environmental Survey's use of qualitatively styled and allegedly undefined descriptive phrases for its conclusions regarding the magnitude of the environmental impact. One issue is whether the Sur-

[3] Among other things, the revised Survey refers to and gives excerpts from an analysis by the Environmental Protection Agency that show that the CNI/UCS analysis of the Nuclear Fuel Services operation does not accurately represent the most recent operating history of NFS.

vey should be revised to define more precisely the magnitude and anticipated ranges of variables pertinent to an assessment of the environmental impact. The Summary Table, S-3, to be used as a basis for evaluating the environmental effects in a cost-benefit analysis for a reactor quantifies all releases, and relates maximum effects to recognizable standards where practical. The Commission believes that providing ranges of variables relevant to assessing environmental impact would serve little or no constructive purpose here since conservatism was utilized in deriving the Summary Table values, and thus, these values already reflect an environmental impact greater than that which is truly anticipated. In addition, developing a range of values would have required separate investigations of multiple factors at over 150 mines, some 19 mills, 2 conversion plants, 3 enrichment plants, and 10 fuel fabrication facilities—to arrive at a range of values augmenting numbers already reflecting substantial conservatism.

Another issue identified in this area is whether more extensive analyses of the long-term environmental effects of waste storage and disposal are necessary to sustain the validity of the conclusions in the Survey. The Commission believes that sufficient data were presented regarding engineered waste storage facilities to justify the conclusion that the contribution of waste storage and disposal to the total environments impact of the fuel cycle is relatively insignificant. However, as more information on high level waste storage and disposal systems becomes available as a result of the environmental impact statement on high level waste storage referenced earlier, a more definitive assessment of the environmental impact can be undertaken and the Survey revised accordingly, as appropriate.

The third issue raised in this area is whether the averaging of environmental effects and the use of models for each fuel cycle step produced values sufficiently conservative to warrant the Survey's conclusion of negligible environmental impact. The "model" facilities defined for the Environmental Survey represent the true industry average for the UF_6 conversion, enrichment, and reprocessing portions of the fuel cycle. The model mill size chosen is near the upper range of mill sizes, and the major environmental effects from milling result from the airborne effluents and tailings waste disposal steps common to all mills. Choosing a relatively large mill as a basis tended to make local environmental effects large, and hence conservative. The fuel fabrication model plant is typical of two plants that produce about 60 percent of the fuel manufactured in the United States today and conservatively represents the remainder. The effluents from the model facility were estimated without taking credit for recently installed pollution-abatement equipment and the distance from the plant to the near site boundary of the model represents the smallest distance of any actual fuel fabrication plant. These model and effluent characteristics produce conservative estimates of environmental effects.

A fourth area in which the hearing board identified an issue relates to suggestions for revision and re-examination of the Environmental Survey at periodic intervals. While the Commission agrees with the suggestions that the Survey be re-examined from time to time to appropriately accommodate new technology and information, it does not believe it necessary or advisable to impose any specific time limit. In our view, revision should be based on growth in the data base, not on any fixed and arbitrary time period. Should future revisions to the Survey necessitate changes in the Summary Table, further rule making will be undertaken and the public afforded an opportunity for comment.

A fifth issue identified by the hearing board is whether any provision should be made for exempting or limiting the applicability of a final rule insofar as pending licensing cases are concerned. In view of the fact that the environmental effects of the uranium fuel cycle have been shown

to be relatively insignificant, the Commission believes that it is unnecessary to apply the amendment to applicant's environmental reports submitted prior to its effective date or to Final Environmental Statements for which Draft Environmental Statements have been circulated for comment prior to the effective date. However, Draft Environmental Statements prepared but not circulated for comment prior to the effective date will be revised in accordance with the provisions of the amendment.

The sixth issue identified is whether the Commission should re-examine the proposed "Alternatives" in light of the record of the proceeding to determine whether modifications are necessary or desirable. In reviewing the record of the rule making hearing the Commission finds general approval for its generic approach to the consideration to be given to the environmental effects associated with the uranium fuel cycle. Many participants advocated adoption of one alternative or the other, other participants proposed modified versions of the alternatives, and one participant advocated adoption of a third alternative which was discussed earlier. After examining these proposals, and after re-examining its own proposed alternatives, the Commission has adopted a slightly modified version of Alternative 2. The Commission, as did many of the hearing participants and commentators, favors the approach of Alternative 2 over that of Alternative 1 because the former conforms with the requirements of subsections 3 and 8 of section A of Appendix D to 10 CFR Part 50 in that it quantifies, to the fullest extent practicable, the environmental effects of the uranium fuel cycle in individual cost-benefit analyses. Incorporation of the Summary Table values into cost-benefit analyses in environmental reports and detailed statements will also help to assure more complete and meaningful documents. The changes in the effective amendment are clarifying and editorial in nature.

The seventh issue identified is whether further clarification is necessary to make clear that the Environmental Survey and the Summary Table of values are purely descriptive and are not intended as operating limits which may be imposed in licensing and regulatory actions with respect to the various fuel cycle facilities. Neither the effective amendment nor the Environmental Survey state or imply that the values in the Summary Table are to be imposed as operating limits on present and future fuel cycle facilities. Such limits are established and governed by other AEC regulations, principally, the provisions of Part 20 of Title 10 of the Code of Federal Regulations, "Standards for Protection Against Radiation." Further clarification is considered unnecessary.

The presiding hearing board raised two additional items which it believed merited Commission attention. The first was more in the nature of a suggestion to the Commission that the Regulatory staff be directed to assure the ready availability of the background references, reference materials, and various calculations which served as the basis for the conclusions of the Survey. Copies of all non-copyrighted material, together with prior drafts of the Environmental Statement marked up by the staff, and over 100 pages of handwritten calculations were given to the Public Document Room on January 5, 1973. Therefore, the Commission believes that the staff had already complied with this suggested directive by making these background references, uncopyrighted reference materials, previous drafts and the various calculations available in the AEC's Public Document Room.

The second item referred to is whether the Environmental Survey should have discussed alternative processes with regard to fuel cycle operations. The purpose of the Survey was to provide a data base from which numerical values could be derived which would reflect the environmental impact associated with the uranium fuel cycle.

These values would then be factored into cost-benefit analyses for individual reactors under the alternative adopted. Whenever possible, Survey data were based on actual operating fuel cycle facilities in order to produce numerical values reflecting real or actual environmental impact. Where this was not possible, conservatism was utilized. As stated earlier, the Environmental Survey is not an impact statement, and therefore, a discussion of alternatives is not required. In addition, the Commission does not believe that the Survey is the appropriate place to discuss alternatives in view of the fact that alternatives are considered in the NEPA context in individual licensing actions on fuel cycle facilities. On the basis of the foregoing and consideration of the comments received, the record of the hearing and other factors involved, the Commission has adopted the amendment set forth below. The amendment is essentially identical to the second alternative contained in the November 15, 1972 FEDERAL REGISTER notice (37 FR 24191), except for minor clarifying and editorial changes.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendment to Appendix D to 10 CFR Part 50 is published as a document subject to condification.

1. A new subsection 15 is added to section A to read as follows:

15. (a) In applicant's environmental reports and the Commission's detailed statements for light-water-cooled nuclear power reactors, the contribution of the environmental effects of uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, reprocessing of irradiated fuel, transportation of radioactive materials and management of low level wastes related to uranium fuel cycle activities to the environmental costs of licensing the nuclear power reactor,

shall be as set forth in the following Table S-3 of the Commission's "Environmental Survey of the Uranium Fuel Cycle." No further discussion of such environmental effects shall be required.

(b) This section does not apply to any applicant's environmental report submitted pursuant to section 4 prior to June 6, 1974, or to any Final Environmental Statement for which a Draft Environmental Statement had been circulated for comment prior to June 6, 1974.

Effective date. The foregoing amendment is effective on June 6, 1974.

(Sec. 161, Pub. L. 83-703, 68 Stat. 948; Sec. 102 Pub. Law 91-190, 83 Stat. 853; (42 U.S.C. 2201, 4332)).

Dated at Washington, D.C. this 16th day of April 1974.

For the Atomic Energy Commission.

PAUL C. BENDER,
Secretary of the Commission.

TABLE S-3

SUMMARY OF ENVIRONMENTAL CONSIDERATIONS FOR NUCLEAR FUEL CYCLE

(NORMALIZED TO MODEL LWR ANNUAL FUEL REQUIREMENTS)

Natural resource use	Total	Maximum effect per annual fuel requirement of model 1,000 MWe LWR
Land (acres):		
Temporarily committed	63	
Undisturbed area	45	
Disturbed area	18	Equivalent to 90 MWe coal-fired powerplant.
Permanently committed	4.6	
Overburden moved (millions of MT)	2.7	Equivalent to 90 MWe coal-fired powerplant.
Water (millions of gallons):		
Discharged to air	156	≈2 percent model 1,000 MWe LWR with cooling tower.
Discharged to water bodies	11,040	
Discharged to ground	123	
Total	11,319	<4 percent of model 1,000 MWe LWR with once-through cooling.
Fossil fuel:		
Electrical energy (thousands of MW-hour)	317	<5 percent of model 1,000 MWe LWR output.
Equivalent coal (thousands of MT)	115	Equivalent to the consumption of a 45 MWe coal-fired powerplant.
Natural gas (millions of scf)	92	<0.2 percent of model 1,000 MWe energy output.

336

Natural resource use	Total	Maximum effect per annual fuel requirement of model 1,000 MWe LWR
Effluents—Chemical (MT)		
Gases (including entrainment):[1]		
SO_x	4400	Equivalent to emissions from 45 MWe coal-fired plant for a year.
NO_x[2]	1177	
Hydrocarbons	13.5	
CO	28.7	Principally from UF_6 production enrichment and reprocessing. Concentration within range of state standards—below level that has effects on human health.
Particulates	1156	
Other gases:		
F-	.72	
Liquids:		From enrichment, fuel fabrication, and reprocessing steps. Components that constitute a potential for adverse environmental effect are present in dilute concentrations and receive additional dilution by receiving bodies of water to levels below permissible standards. The constituents that require dilution and the flow of dilution water are: NH_3—600 cfs. NO_3—20 cfs. Fluoride—70 cfs.
SO_4-	10.3	
NO_3-	26.7	
Fluoride	12.9	
Ca^{++}	5.4	
Cl-	8.6	
Na^+	16.9	
NH	11.5	
Fe[3]	.4	
Tailings solutions (thousands of MT)	240	From mills only—no significant effluents to environment.
Solids	91,000	Principally from mills—no significant effluents to environment.

337

Natural resource use	Total	Maximum effect per annual fuel requirement of model 1,000 MWe LWR
Effluents—Radiological (curies):		
Gases (including entrainment):		Principally from mills—maximum annual dose rate <4 percent of average natural background within 5 mi of mill. Results in 0.06 man-rem per annual fuel requirement.
Rn-222	75	
Ra-226	.02	
Th-230	.02	
Uranium	.032	Principally from fuel reprocessing plants—Whole body dose is 4.4 man-rem per annual fuel requirements for population within 50 mi radius. This is <0.005 percent of average natural background dose to this population. Release from Federal Waste Repository of 0.005 Ci/yr has been included in fission products and transuranics total.
Tritium (thousand)	16.7	
Kr-85 (thousands)	350	
I-129	.0024	
I-131	.024	
Fission products and transuranics	1.01	
Liquids:		Principally from milling—included in tailings liquor and returned to ground—no effluents; therefore, no effect on environment.
Uranium and daughters	2.1	
Ra-226	.0034	From UF_6 production—concentration 5 percent of 10 CFR 20 for total processing of 27.5[a] model LWR annual fuel requirements.
Th-230	.0015	
Th-234	.01	From fuel fabrication plants—concentration 10 percent of 10 CFR 20 for total processing 26 annual fuel requirements for model LWR.

Natural resource use	Total	Maximum effect per annual fuel requirement of model 1,000 MWe LWR
Ru-106	[3].15	From reprocessing plants—maximum concentration 4 percent of 10 CFR 20 for total reprocessing of 26 annual fuel requirements for model LWR.
Tritium (thousands)	2.5	
Solids (buried):		
Other than high level	601	All except 1 Ci comes from mills—included in tailings returned to ground—no significant effluent to the environment, 1 Ci from conversion and fuel fabrication is buried.
Thermal (billions)	3,360	<7 percent of model 1,000 MWe LWR.
Transportation (man-rem):		
Exposure of workers and general public	.334	

[1] Estimated effluents based upon combustion of equivalent coal for power generation.

[2] 1.2 percent from natural gas use and process.

[3] Cs-137 (0.075 Ci/AFR) and Sr-90 (0.004 Ci/AFR) are also emitted.

Atomic Energy Act of 1954, 42 U.S.C. §§ 2011 *et seq.*

"CHAPTER I. DECLARATION, FINDINGS, AND PURPOSE

"SECTION 1. DECLARATION.—Atomic energy is capable of application for peaceful as well as military purposes. It is therefore declared to be the policy of the United States that—

"a. the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and security; and

"b. the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise.

"SEC. 2. FINDINGS.—The Congress of the United States hereby makes the following findings concerning the development, use, and control of atomic energy:

"a. The development, utilization, and control of atomic energy for military and for all other purposes are vital to the common defense and security.

"c. The processing and utilization of source, byproduct, and special nuclear material affect interstate and foreign commerce and must be regulated in the national interest.

"d. The processing and utilization of source, byproduct, and special nuclear material must be regulated in the national interest and in order to provide for the common defense and security and to protect the health and safety of the public.

"e. Source and special nuclear material, production facilities, and utilization facilities are affected with the public

interest, and regulation by the United States of the production and utilization of atomic energy and of the facilities used in connection therewith is necessary in the national interest to assure the common defense and security and to protect the health and safety of the public.

"f. The necessity for protection against possible interstate damage occurring from the operation of facilities for the production or utilization of source or special nuclear material places the operation of those facilities in interstate commerce for the purposes of this Act.

"g. Funds of the United States may be provided for the development and use of atomic energy under conditions which will provide for the common defense and security and promote the general welfare.

"i. In order to protect the public and to encourage the development of the atomic energy industry, in the interest of the general welfare and of the common defense and security, the United States may make funds available for a portion of the damages suffered by the public from nuclear incidents, and may limit the liability of those persons liable for such losses.

"SEC. 3. PURPOSE.—It is the purpose of this Act to effectuate the policies set forth above by providing for—

"a. a program of conducting, assisting, and fostering research and development in order to encourage maximum scientific and industrial progress;

"b. a program for the dissemination of unclassified scientific and technical information and for the control, dissemination, and declassification of Restricted Data, subject to appropriate safeguards, so as to encourage scientific and industrial progress;

"c. a program for Government control of the possession, use, and production of atomic energy and special nuclear material, whether owned by the Government or others, so

directed as to make the maximum contribution to the common defense and security and the national welfare, and to provide continued assurance of the Government's ability to enter into and enforce agreements with nations or groups for the control of special nuclear materials and atomic weapons.

"d. a program to encourage widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public;

"e. a program of international cooperation to promote the common defense and security and to make available to cooperating nations the benefits of peaceful applications of atomic energy as widely as expanding technology and considerations of the common defense and security will permit; and

"f. a program of administration which will be consistent with the foregoing policies and programs, with international arrangements, and with agreements for cooperation, which will enable the Congress to be currently informed so as to take further legislative action as may be appropriate.

"CHAPTER 2. DEFINITIONS

"SEC. 11. DEFINITIONS.—The intent of Congress in the definitions as given in this section should be construed from the words or phrases used in the definitions. As used in this Act:

"a. The term 'agency of the United States' means the executive branch of the United States, or any Government agency, or the legislative branch of the United States, or any agency, committee, commission, office, or other establishent in the legislative branch, or the judicial branch of the

United States, or any office, agency, committee, commission, or other establishment in the judicial branch.

"b. The term 'agreement for cooperation' means any agreement with another nation or regional defense organization authorized or permitted by sections 54, 57, 64, 82, 91 c., 103, 104, or 144, and made pursuant to section 123.

"c. The term 'atomic energy' means all forms of energy released in the course of nuclear fision or nuclear transformation.

"d. The term 'atomic weapon' means any device utilizing atomic energy, exclusive of the means for transporting or propelling the device (where such means is a separable and divisible part of the device), the principal purpose of which is for use as, or for development of, a weapon, a weapon prototype, or a weapon test device.

"e. The term 'byproduct material' means any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.

"f. The term 'Commission' means the Atomic Energy Commission.

"g. The term 'common defense and security' means the common defense and security of the United States.

"h. The term 'defense information' means any information in any category determined by any Government agency authorized to classify information, as being information respecting, relating to, or affecting the national defense.

"i. The term 'design' means (1) specifications, plans, drawings, blueprints, and other items of like nature; (2) the information contained therein; or (3) the research and development data pertinent to the information contained therein.

"j. The term 'extraordinary nuclear occurrence' means any event causing a discharge or dispersal of source, special nuclear, or byproduct material from its intended place of confinement in amounts offsite, or causing radiation levels offsite, which the Commission determines to be substantial, and which the Commission determines has resulted or will probably result in substantial damages to persons offsite or property offsite. Any determination by the Commission that such an event has, or has not, occurred shall be final and conclusive, and no other official or any court shall have power or jurisdiction to review any such determination. The Commission shall establish criteria in writing setting forth the basis upon which such determination shall be made. As used in this subsection, 'offsite' means away from 'the location' or 'the contract location' as defined in the applicable Commission indemnity agreement, entered into pursuant to section 170.

"k. The term 'financial protection' means the ability to respond in damages for public liability and to meet the costs of investigating and defending claims and settling suits for such damages.

"l. The term 'Government agency' means any executive department, commission, independent establishment, corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government.

"m. The term 'indemnitor' means (1) any insurer with respect to his obligations under a policy of insurance furnished as proof of financial protection; (2) any licensee, contractor or other person who is obligated under any other form of financial protection, with respect to such obligations; and (3) the Commission with respect to any obligation undertaken by it in an indemnity agreement entered into pursuant to section 170.

"n. The term 'international arrangement' means any international agreement hereafter approved by the Congress or any treaty during the time such agreement or treaty is in full force and effect, but does not include any agreement for cooperation.

"o. The term 'Joint Committee' means the Joint Committee on Atomic Energy.

"p. The term 'licensed activity' means an activity licensed pursuant to this Act and covered by the provisions of section 170a.

"q. The term 'nuclear incident' means any occurrence, including an extraordinary nuclear occurrence, within the United States causing, within or outside the United States, bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or byproduct material: *Provided, however,* That as the term is used in subsection 170 l., it shall include any such occurrence outside of the United States: *And provided further,* That as the term is used in section 170d., is shall include any such occurrence outside of the United States if such occurrence involves a facility or device owned by, and used by or under contract with, the United States.

"r. The term 'operator' means any individual who manipulates the controls of a utilization or production facility.

"s. The term 'person' means (1) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency other than the Commission, any State or any political subdivision of, or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing.

"t. The term 'person indemnified' means (1) with respect to a nuclear incident occurring within the United States and with respect to any nuclear incident in connection with the design, development, construction, operation, repair, maintenance, or use of the nuclear ship Savannah, the person with whom an indemnity agreement is executed and any other person who may be liable for public liability; or (2) with respect to any other nuclear incident occurring outside the United States, the person with whom an indemnity agreement is executed and any other person who may be liable for public liability by reason of his activities under any contract with the Commission or any project to which indemnification under the provisions of section 170d. has been extended or under any subcontract, purchase order or other agreement, of any tier, under any such contract or project.

"u. The term 'produce', when used in relation to special nuclear material, means (1) to manufacture, make, produce, or refine special nuclear material; (2) to separate special nuclear material from other substances in which such material may be contained; or (3) to make or to produce new special nuclear material.

"v. The term 'production facility' means (1) any equipment or device determined by rule of the Commission to be capable of the production of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or (2) any important component part especially designed for such equipment or device as determined by the Commission.

"w. The term 'public liability' means any legal liability arising out of or resulting from a nuclear incident, except: (i) claims under State or Federal workmen's compensation acts of employees of persons indemnified who are employed at the site of and in connection with the activity

where the nuclear incident occurs; (ii) claims arising out of an act of war; and (iii) whenever used in subsections 170 a., c., and k., claims for loss of, or damage to, or loss of use of property which is located at the site of and used in connection with the licensed activity where the nuclear incident occurs. 'Public liability' also includes damage to property of persons indemnified, *Provided,* That such property is covered under the terms of the financial protection required, except property which is located at the site of and used in connection with the activity where the nuclear incident occurs.

"x. The term 'research and development' means (1) theoretical analysis, exploration, or experimentation; or (2) the extension of investigative findings and theories of a scientific or technical nature into practical application for experimental and demonstration purposes, including the experimental production and testing of models, devices, equipment, materials, and processes.

"y. The term 'Restricted Data' means all data concerning (1) design, manufacture, or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 142.

"z. The term 'source material' means (1) uranium, thorium, or any other material which is determined by the Commission pursuant to the provisions of section 61 to be source material; or (2) ores containing one or more of the foregoing materials, in such concentration as the Commission may by regulation determine from time to time.

"aa. The term 'special nuclear material' means (1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 51, determines to be special nuclear material, but does not include source ma-

terial; or (2) any material artificially enriched by any of the foregoing, but does not include source material.

"bb. The term 'United States' when used in a geographical sense includes all Territories and possessions of the United States, the Canal Zone and Puerto Rico.

"cc. The term 'utilization facility' means (1) any equipment or device, except an atomic weapon, determined by rule of the Commission to be capable of making use of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public, or peculiarly adapted for making use of atomic energy in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or (2) any important component part especially designed for such equipment or device as determined by the Commission.

"CHAPTER 10. ATOMIC ENERGY LICENSES

"SEC. 101. LICENSE REQUIRED.—It shall be unlawful, except as provided in section 91, for any person within the United States to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export any utilization or production facility except under and in accordance with a license issued by the Commission pursuant to section 103 or 104.

"SEC. 102. UTILIZATION AND PRODUCTION FACILITIES FOR INDUSTRIAL OR COMMERCIAL PURPOSES.—

"a. Except as provided in subsections b. and c., or otherwise specifically authorized by law, any license hereafter issued for a utilization or production facility for industrial or commercial purposes shall be issued pursuant to section 103.

"b. Any license hereafter issued for a utilization or production facility for industrial or commercial purposes, the construction or operation of which was licensed pursuant to subsection 104 b. prior to enactment into law of this subsection, shall be issued under subsection 104 b.

"c. Any license for a utilization or production facility for industrial or commercial purposes constructed or operated under an arrangement with the Commission entered into under the Cooperative Power Reactor Demonstration Program shall, except as otherwise specifically required by applicable law, be issued under subsection 104 b.

"SEC. 103. COMMERCIAL LICENSES.—

"a. The Commission is authorized to issue licenses to persons applying therefor to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export under the terms of an agreement for cooperation arranged pursuant to section 123, utilization or production facilities for industrial or commercial purposes. Such licenses shall be issued in accordance with the provisions of chapter 16 and subject to such conditions as the Commission may by rule or regulation establish to effectuate the purposes and provisions of this Act.

"b. The Commission shall issue such licenses on a nonexclusive basis to persons applying therefor (1) whose proposed activities will serve a useful purpose proportionate to the quantities of special nuclear material or source material to be utilized; (2) who are equipped to observe and who agree to observe such safety standards to protect health and to minimize danger to life or property as the Commission may by rule establish; and (3) who agree to make available to the Commission such technical information and data concerning activities under such licenses as the Commission may determine necessary to promote the common defense and security and to protect

the health and safety of the public. All such information may be used by the Commission only for the purposes of the common defense and security and to protect the health and safety of the public.

"c. Each such license shall be issued for a specified period, as determined by the Commission, depending on the type of activity to be licensed, but not exceeding forty years, and may be renewed upon the expiration of such period.

"d. No license under this section may be given to any person for activities which are not under or within the jurisdiction of the United States, except for the export of production or utilization facilities under terms of an agreement for cooperation arranged pursuant to section 123, or except under the provisions of section 109. No license may be issued to an alien or any corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. In any event, no license may be issued to any person within the United States if, in the opinion of the Commission, the issuance of a license to such person would be inimical to the common defense and security or to the health and safety of the public.

* * *

"SEC. 106. CLASSES OF FACILITIES.—The Commission may—

"a. group the facilities licensed under section 103 or under section 104 into classes which may include either production or utilization facilities or both, upon the basis of the similarity of operating and technical characteristics of the facilities;

"b. define the various activities to be carried on at each such class of facility; and

"c. designate the amounts of special nuclear material available for use by each such facility.

"SEC. 107. OPERATORS' LICENSES.—The Commission shall—

"a. prescribe uniform conditions for licensing individuals as operators of any of the various classes of production and utilization facilities licensed in this Act;

"b. determine the qualifications of such individuals;

"c. issue licenses to such individuals in such form as the Commission may prescribe; and

"d. suspend such licenses for violations of any provision of this Act or any rule or regulation issued thereunder whenever the Commission deems such action desirable.

"SEC. 108. WAR OR NATIONAL EMERGENCY.—Whenever the Congress declares that a state of war or national emergency exists, the Commission is authorized to suspend any licenses granted under this Act if in its judgment such action is necessary to the common defense and security. The Commission is authorized during such period, if the Commission finds it necessary to the common defense and security, to order the recapture of any special nuclear material or to order the operation of any facility licensed under section 103 or 104, and is authorized to order the entry into any plant or facility in order to recapture such material, or to operate such facility. Just compensation shall be paid for any damages caused by the recapture of any special damages caused by the recapture of any special nuclear material or by the operation of any such family.

"SEC. 109. COMPONENT PARTS OF FACILITIES.—With respect to those utilization and production facilities which are so determined by the Commission pursuant to subsection 11 v. (2) or 11 cc. the Commission may (a) issue general licenses for activities required to be licensed under section 101, if the Commission determines in writing that such general licensing will not constitute an unreasonable risk to the common defense and security, and (b) issue li-

censes for the export of such facilities, if the Commission determines in writing that each export will not constitute an unreasonable risk to the common defense and security.

"SEC. 110. EXCLUSIONS.—Nothing in this chapter shall be deemed—

"a. to require a license for (1) the processing, fabricating, or refining of special nuclear material, or the separation of special nuclear material, or the separation of special nuclear material from other substances, under contract with and for the account of the Commission; or (2) the construction or operation of facilities under contract with and for the account of the Commission; or

"b. to require a license for the manufacture, production, or acquisition by the Department of Defense of any utilization facility authorized pursuant to section 91, or for the use of such facility by the Department of Defense or a contractor thereof.

"CHAPTER 14. GENERAL AUTHORITY

"SEC. 161. GENERAL PROVISIONS.—In the performance of its functions the Commission is authorized to—

"a. establish advisory boards to advise with and make recommendations to the Commission on legislation, policies, administration, research, and other matters, provided that the Commission issues regulations setting forth the scope, procedure, and limitations of the authority of each such board;

"b. establish by rule, regulation, or order, such standards and instructions to govern the possession and use of special nuclear material, source material, and byproduct material as the Commission may deem necessary or desirable to promote the common defense and security or to protect health or to minimize danger to life or property;

"c. make such studies and investigations, obtain such information, and hold such meetings or hearings as the Commission may deem necessary or proper to assist it in exercising authority provided in this Act, or in the administration or enforcement of this Act, or any regulations or orders issued thereunder. For such purposes the Commission is authorized to administer oaths and affirmations, and by subpena to require any person to appear and testify, or to appear and produce documents, or both, at any designated place. Witnesses subpenaed under this subsection shall be paid the same fees and mileage as are paid witnesses in the district courts of the United States;

"d. appoint and fix the compensation of such officers and employees as may be necessary to carry out the functions of the Commission. Such officers and employees shall be appointed in accordance with the civil-service laws and their compensation fixed in accordance with the Classification Act of 1949, as amended, except that, to the extent the Commission deems such action necessary to the discharge of its responsibilities, personnel may be employed and their compensation fixed without regard to such laws: *Provided, however,* That no officer or employee (except such officers and employees whose compensation is fixed by law, and scientific and technical personnel up to a limit of the highest rate of grade 18 of the General Schedule of the Classification Act of 1949, as amended) whose position would be subject to the Classification Act of 1949, as amended, if such Act were applicable to such position, shall be paid a salary at a rate in excess of the rate payable under such Act for positions of equivalent difficulty or responsibility. Such rates of compensation may be adopted by the Commission as may be authorized by the Classification Act of 1949, as amended, as of the same date such rates are authorized for positions subject to such Act. The Commission shall make adequate provision for administrative review of any determination to dismiss any employee;

"e. acquire such material, property, equipment, and facilities, establish or construct such buildings and facilities, and modify such buildings and facilities from time to time, as it may deem necessary, and construct, acquire, provide, or arrange for such facilities and services (at project sites where such facilities and services are not available) for the housing, health, safety, welfare, and recreation of personnel employed by the Commission as it may deem necessary, subject to the provisions of section 174: *Provided, however,* That in the communities owned by the Commission, the Commission is authorized to grant privileges, leases and permits upon adjusted terms which (at the time of the initial grant of any privilege, grant, lease, or permit, or renewal thereof, or in order to avoid inequities or undue hardship prior to the sale by the United States of property affected by such grant) are fair and reasonable to responsible persons to operate commercial businesses without advertising and without advertising (sic) and without securing competitive bids, but taking into consideration, in addition to the price, and among other things (1) the quality and type of services required by the residents of the community, (2) the experience of each concession applicant in the community and its surrounding area, (3) the ability of the concession applicant to meet the needs of the community, and (4) the contribution the concession applicant has made or will make to the other activities and general welfare of the community.

"f. with the consent of the agency concerned, utilize or employ the services of personnel of any Government agency or any State or local government, or voluntary or uncompensated personnel, to perform such functions on its behalf as may appear desirable;

"g. acquire, purchase, lease, and hold real and personal property, including patents, as agents of and on behalf of the United States subject to the provisions of section 174, and to sell, lease, grant, and dispose of such real and personal property as provided in this Act;

"h. consider in a single application one or more of the activities for which a license is required by this Act, combine in a single license one or more of such activities, and permit the applicant or licensee to incorporate by reference pertinent information already filed with the Commission;

"i. prescribe such regulations or orders as it may deem necessary (1) to protect Restricted Data received by any person in connection with any activity authorized pursuant to this Act, (2) to guard against the loss or diversion of any special nuclear material acquired by any person pursuant to section 53 or produced by any person in connection with any activity authorized pursuant to this Act, to prevent any use or disposition thereof which the Commission may determine to be inimical to the common defense and security, including regulations or orders designating activities, involving quantities of special nuclear material which in the opinion of the Commission are important to the common defense and security, that may be conducted only by persons whose character, associations, and loyalty shall have been investigated under standards and specifications established by the Commission and as to whom the Commission shall have determined that permitting each such person to conduct the activity will not be inimical to the common defense and security, and (3) to govern any activity authorized pursuant to this Act, including standards and restrictions governing the design, location and operation of facilities used in the conduct of such activity, in order to protect health and to minimize danger to life or property;".

"j. without regard to the provisions of the Federal Property and Administrative Services Act of 1949, as amended, except section 207 of that Act, or any other law, make such disposition as it may deem desirable of (1) radioactive materials, and (2) any other property, the special disposition of which is, in the opinion of the Commission, in the interest of the national security: *Provided, however,* That

the property furnished to licensees in accordance with the provisions of subsection 161 m. shall not be deemed to be properly disposed of by the Commission pursuant to this subsection;

"k. authorize such of its members, officers, and employees as it deems necessary in the interest of the common defense and security to carry firearms while in the discharge of their official duties. The Commission may also authorize such of those employees of its contractors engaged in the protection of property owned by the United States and located at facilities owned by or contracted to the United States as it deems necessary in the interests of the common defense and security to carry firearms while in the discharge of their official duties;

"m. enter into agreements with persons licensed under Section 103, 104, 53 a. (4), or 63 a. (4) for such periods of time as the Commission may deem necessary or desirable (1) to provide for the processing, fabricating, separating, or refining in facilities owned by the Commission of source, byproduct, or other material or special nuclear material owned by or made available to such licenses and which is utilized or produced in the conduct of the licensed activity, and (2) to sell, lease, or otherwise make available to such licensees such quantities of source or byproduct material, and other material not defined as special nuclear material pursuant to this Act, as may be necessary for the conduct of the licensed activity: *Provided, however,* That any such agreement may be canceled by the licensee at any time upon payment of such reasonable cancellation charges as may be agreed upon by the licensee and the Commission: *And provided further,* That the Commission shall establish prices to be paid by licensees for material or services to be furnished by the Commission pursuant to this subsection, which prices shall be established on such a nondiscriminatory basis as, in the opinion of the Commission, will provide reasonable compensation to the Government for

such material or services and will not discourage the development of sources of supply independent of the Commission;

"n. delegate to the General Manager or other officers of the Commission any of those functions assigned to it under this Act except those specified in sections 51, 57 b., 61, 108, 123, 145b. (with respect to the determination of those persons to whom the Commission may reveal Restricted Data in the national interest), 145 f., and 161 a.;

"o. require by rule, regulation, or order, such reports, and the keeping of such records with respect to, and to provide for such inspections of, activities and studies of types specified in section 31 and of activities under licenses issued pursuant to section 53, 63, 81, 103, and 104, as may be necessary to effectuate the purposes of this Act, including section 105; and

"p. make, promulgate, issue, rescind, and amend such rules and regulations as may be necessary to carry out the purposes of this Act.

"q. The Commission is authorized and empowered, under such terms and conditions as are deemed advisable by it, to grant easements for rights-of-way over, across, in, and upon acquired lands under its jurisdiction and control, and public lands permanently withdrawn or reserved for the use of the Commission, to any State, political subdivision thereof, or municipality, or to any individual, partnership, or corporation of any State, Territory, or possession of the United States, for (a) railroad tracks; (b) oil pipe lines; (c) substations for electric power transmission lines, telephone lines, and telegraph lines, and pumping stations for gas, water, sewer, and oil pipe lines; (d) canals; (e) ditches; (f) flumes; (g) tunnels; (h) dams and reservoirs in connection with fish and wildlife programs, fish hatcheries, and other fish-cultural improvements; (i) roads and streets; and (j) for any other purpose or purposes deemed

advisable by the Commission: *Provided,* That such rights-of-way shall be granted only upon a finding by the Commission that the same will not be incompatible with the public interest: *Provided further,* That such rights-of-way shall not include any more land than is reasonably necessary for the purpose for which granted; *And provided further,* That all or any part of such rights-of-way may be annulled and forfeited by the Commission for failure to comply with the terms and conditions of any grant hereunder or for nonuse for a period of two consecutive years or abandonment of rights granted under authority hereof. Copies of all instruments granting easements over public lands pursuant to this section shall be furnished to the Secretary of the Interior.

"r. Under such regulations and for such periods and at such prices the Commission may prescribe, the Commission may sell or contract to sell to purchasers within Commission-owned communities or in the immediate vicinity of the Commission community, as the case may be, any of the following utilities and related services, if it is determined that they are not available from another local source and that the sale is in the interest of the national defense or in the public interest:

"(1) Electric power.
"(2) Steam.
"(3) Compressed air.
"(4) Water.
"(5) Sewage and garbage disposal.
"(6) Natural, manufactured, or mixed gas.
"(7) Ice.
"(8) Mechanical refrigeration.
"(9) Telephone service.

"Proceeds of sales under this subsection shall be credited to the appropriation currently available for the supply

of that utility or service. To meet local needs the Commission may make minor expansions and extensions of any distributing system or facility within or in the immediate vicinity of a Commission-owned community through which a utility or service is furnished under this subsection.

"s. establish a plan for a succession of authority which will assure the continuity of direction of the Commission's operations in the event of a national disaster due to enemy activity. Notwithstanding any other provision of this Act, the person or persons succeeding to command in the event of disaster in accordance with the plan established pursuant to this subsection shall be vested with all of the authority of the Commission: *Provided,* That any such succession to authority, and vesting of authority shall be effective only in the event and as long as a quorum of three or more members of the Commission is unable to convene and exercise direction during the disaster period: *Provided further,* That the disaster period includes the period when attack on the United States is imminent and the post-attack period necessary to reestablish normal lines of command;

"t. enter into contracts for the processing, fabricating, separating, or refining in facilities owned by the Commission of source, byproduct or other material, or special nuclear material, in accordance with and within the period of an agreement for cooperation while comparable services are available to persons licensed under section 103 or 104: *Provided,* That the prices for services under such contracts shall be no less than the prices currently charged by the Commission pursuant to section 161m.;

"u. (1) enter into contracts for such periods of time as the Commission may deem necessary or desirable, but not to exceed five years from the date of execution of the contract, for the purchase or acquisition of reactor services or services related to or required by the operation of reactors;

"(2) (A) enter into contracts for such periods of time as the Commission may deem necessary or desirable for the purchase or acquisition of any supplies, equipment, materials, or services required by the Commission whenever the Commission determines that: (i) it is advantageous to the Government to make such purchase or acquisition from commercial sources; (ii) the furnishing of such supplies, equipment, materials, or services will require the construction or acquisition of special facilities by the vendors or suppliers thereof; (iii) the amortization chargeable to the Commission constitutes an appreciable portion of the cost of contract performance, excluding cost of materials; and (iv) the contract for such period is more advantageous to the Government than a similar contract not executed under the authority of this subsection. Such contracts shall be entered into for periods not to exceed five years each from the date of initial delivery of such supplies, equipment, materials, or services or ten years from the date of execution of the contracts excluding periods of renewal under option.

"(B) In entering into such contracts the Commission shall be guided by the following principles: (i) the percentage of the total cost of special facilities devoted to contract performance and chargeable to the Commission should not exceed the ratio between the period of contract deliveries and the anticipated useful life of such special facilities; (ii) the desirability of obtaining options to renew the contract for reasonable periods at prices not to include charges for special facilities already amortized; and (iii) the desirability of reserving in the Commission the right to take title to the special facilities under appropriate circumstances; and

"(3) include in contracts made under this subsection provisions which limit the obligation of funds to estimated annual deliveries and services and the unamortized balance of such amounts due for special facilities as the parties shall agree is chargeable to the performance of the contract. Any appropriation available at the time of termination or thereafter made available to the Commission for operating expenses shall be available for payment of such costs which may arise from termination as the contract may provide. The term 'special facilities' as used in this subsection means any land and any depreciable buildings, structures, utilities, machinery, equipment, and fixtures necessary for the production or furnishing of such supplies, equipment, materials, or services and not available to the vendors or suppliers for the performance of the contract.

"v. (A) enter into contracts with persons licensed under sections 53, 63, 103 or 104 for such periods of time as the Commission may deem necessary or desirable to provide, after December 31, 1968, for the producing or enriching of special nuclear material in facilities owned by the Commission; and

"(B) enter into contracts to provide, after December 31, 1968, for the producing or enriching of special nuclear material in facilities owned by the Commission in accordance with and within the period of an agreement for cooperation arranged pursuant to section 123 while comparable services are made available pursuant to paragraph (A) of this subsection: *Provided,* That (i) prices for services under paragraph (A) of this subsection shall be established on a nondiscriminatory basis; (ii) prices for services under paragraph (B) of this subsection shall be no less than prices under paragraph (A) of this subsection; and (iii) any prices established under this subsection shall be on a basis of recovery of the Government's costs over a reasonable period of time: *And provided further,* That the Commission, to the extent necessary to assure the maintenance of a viable domestic uranium industry, shall not offer such services for source or special nuclear materials of foreign origin intended for use in a utilization facility within or under the jurisdiction of the United States. The

Commission shall establish criteria in writing setting forth the terms and conditions under which services provided under this subsection shall be made available including the extent to which such services will be made available for source or special nuclear material of foreign origin intended for use in a utilization facility within or under the jurisdiction of the United States: *Provided,* That before the Commission establishes such criteria, the proposed criteria shall be submitted to the Joint Committee, and a period of forty-five days shall elapse while Congress is in session (in computing the forty-five days there shall be excluded the days in which either House is not in session because of adjournment for more than three days) unless the Joint Committee by resolution in writing waives the conditions of, or all or any portion of, such forty-five day period.

"w. prescribe and collect from any other Government agency, which applies for or is issued a license for a utilization facility designed to produce electrical or heat energy pursuant to section 103 or 104b, any fee, charge, or price which it may require, in accordance with the provisions of section 483a of title 31 of the United States Code or any other law, of applicants for, or holders of, such licenses.

"SEC. 162. CONTRACTS.—The President may, in advance, exempt any specific action of the Commission in a particular matter from the provisions of law relating to contracts whenever he determines that such action is essential in the interest of the common defense and security.

"SEC. 163. ADVISORY COMMITTEES.—The members of the General Advisory Committee established pursuant to section 26 and the members of advisory boards established pursuant to section 161 a. may serve as such without regard to the provisions of sections 281, 283, or 284 of Title 18 of the United States Code, except insofar as such sections may prohibit any such member from receiving compensation from a source other than a nonprofit educational institution in respect of any particular matter which directly involves the Commission or in which the Commission is directly interested.

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"CHAPTER 16. JUDICIAL REVIEW AND ADMINISTRATIVE PROCEDURE

"SEC. 181. GENERAL.—The provisions of the Administrative Procedure Act (Public Law 404, Seventy-ninth Congress, approved June 11, 1946) shall apply to all agency action taken under this Act, and the terms 'agency' and 'agency action' shall have the meaning specified in the Administration Procedure Act: *Provided, however,* That in the case of agency proceedings or actions which involve Restricted Data or defense information, the Commission shall provide by regulation for such parallel procedures as will effectively safeguard and prevent disclosure of Restricted Data or defense information to unauthorized persons with minimum impairment of the procedural rights which would be available if Restricted Data or defense information were not involved.

"SEC. 182. LICENSE APPLICATIONS.—

"a. Each application for a license hereunder shall be in writing and shall specifically state such information as the Commission, by rule or regulation, may determine to be necessary to decide such of the technical and financial qualifications of the applicant, the character of the applicant, the citizenship of the applicant, or any other qualifications of the applicant as the Commission may deem appropriate for the license. In connection with applications for licenses to operate production or utilization facilities, the applicant shall state such technical specifications, including information of the amount, kind, and source of special nuclear material required, the place of

the use, the specific characteristics of the facility, and such other information as the Commission may, by rule or regulation, deem necessary in order to enable it to find that the utilization or production of special nuclear material will be in accord with the common defense and security and will provide adequate protection to the health and safety of the public. Such technical specifications shall be a part of any license issued. The Commission may at any time after the filing of the original application, and before the expiration of the license, require further written statements in order to enable the Commission to determine whether the application should be granted or denied or whether a license should be modified or revoked. All applications and statements shall be signed by the applicant or licensee. Applications for, and statements made in connection with, licenses under sections 103 and 104 shall be made under oath or affirmation. The Commission may require any other applications or statements to be made under oath or affirmation.

"b. The Advisory Committee on Reactor Safeguards shall review each application under section 103 or section 104 b. for a construction permit or an operating license for a facility, any application under section 104 c. for a construction permit or an operating license for a testing facility, any application under section 104 a. or c. specifically referred to it by the Commission, and any application for an amendment to a construction permit or an amendment to an operating license under section 103 or 104 a., b., or c. specifically referred to it by the Commission, and shall submit a report thereon which shall be made part of the record of the application and available to the public except to the extent that security classification prevents disclosure.

"c. The Commission shall not issue any license under section 103 for a utilization or production facility for the generation of commercial power until it has given notice

in writing to such regulatory agency as may have jurisdiction over the rates and services incident to the proposed activity; until it has published notice of the application in such trade or news publications as the Commission deems appropriate to give reasonable notice to municipalities, private utilities, public bodies, and cooperatives which might have a potential interest in such utilization or production facility; and until it has published notice of such application once each week for four consecutive weeks in the Federal Register, and until four weeks after the last notice.

"d. The Commission, in issuing any license for a utilization or production facility for the generation of commercial power under section 103, shall give preferred consideration to applications for such facilities which will be located in high cost power areas in the United States if there are conflicting applications for a limited opportunity for such license. Where such conflicting applications resulting from limited opportunity for such license include those submitted by public or cooperative bodies such applications shall be given prefered consideation.

"SEC. 183. TERMS OF LICENSES.—Each license shall be in such form and contain such terms and conditions as the Commission may, by rule or regulation, prescribe to effectuate the provisions of this Act, including the following provisions:

"b. No right to the special nuclear material shall be conferred by the license except as defined by the license.

"c. Neither the license nor any right under the license shall be assigned or otherwise transferred in violation of the provisions of this Act.

"d. Every license issued under this Act shall be subject to the right of recapture or control reserved by section 108, and to all of the other provisions of this Act, now or

hereafter in effect and to all valid rules and regulations of the Commission.

"SEC. 184. INALIENABILITY OF LICENSES. — No license granted hereunder and no right to utilize or produce special nuclear material granted hereby shall be transferred, assigned or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of any license to any person, unless the Commission shall, after securing full information, find that the transfer is in accordance with the provisions of this Act, and shall give its consent in writing. The Commission may give such consent to the creation of a mortgage, pledge, or other lien upon any facility or special nuclear material, owned or thereafter acquired by a licensee, or upon any leasehold or other interest in such facility, and the rights of the creditors so secured may thereafter be enforced by any court subject to rules and regulations established by the Commission to protect public health and safety and promote the common defense and security.

"SEC. 185. CONSTRUCTION PERMITS.—All applicants for licenses to construct or modify production or utilization facilities shall, if the application is otherwise acceptable to the Commission, be initially granted a construction permit. The construction permit shall state the earliest and latest dates for the completion of the construction or modification. Unless the construction or modification of the facility is completed by the completion date, the construction permit shall expire, and all rights thereunder be forfeited, unless upon good cause shown, the Commission extends the completion date. Upon the completion of the construction or modification of the facility, upon the filing of any additional information needed to bring the original application up to date, and upon finding that the facility authorized has been constructed and will operate in conformity with the application as amended and in conformity with the provisions of this Act and of the rules and regulations of the Commission, and in the absence of any good cause being shown to the Commission why the granting of a license would not be in accordance with the provisions of this Act, the Commission shall thereupon issue a license to the applicant. For all other purposes of this Act, a construction permit is deemed to be a 'license'.

"SEC. 186. REVOCATION.—

"a. Any license may be revoked for any material false statement in the application or any statement of fact required under section 182, or because of conditions revealed by such application or statement of fact or any report, record, or inspection or other means which would warrant the Commission to refuse to grant a license on an original application, or for failure to construct or operate a facility in accordance with the terms of the construction permit or license or the technical specifications in the application, or for violation of, or failure to observe any of the terms and provisions of this Act or of any regulation of the Commission.

"b. The Commission shall follow the provisions of section 9(b) of the Administrative Procedure Act in revoking any license.

"c. Upon revocation of the license, the Commission may immediately retake possession of all special nuclear material held by the licensee. In cases found by the Commission to be of extreme importance to the national defense and security or to the health and safety of the public, the Commission may recapture any special nuclear material held by the licensee or may enter upon and operate the facility prior to any of the procedures provided under the Administrative Procedure Act. Just compensation shall be paid for the use of the facility.

"SEC. 187. MODIFICATION OF LICENSE.—The terms and conditions of all licenses shall be subject to amendment, revision, or modification, by reason of amendments of

this Act, or by reason of rules and regulations issued in accordance with the terms of this Act.

"SEC. 188. CONTINUED OPERATION OF FACILITIES.—Whenever the Commission finds that the public convenience and necessity or the production program of the Commission requires continued operation of a production facility or utilization facility the license for which has been revoked pursuant to section 186, the Commission may, after consultation with the appropriate regulatory agency, State or Federal, having jurisdiction, order that possession be taken of and such facility be operated for such period of time as the public convenience and necessity or the production of the Commission may, in the judgment of the Commission, require, or until a license for the operation of the facility shall become effective. Just compensation shall be paid for the use of the facility.

"SEC. 189. HEARINGS AND JUDICIAL REVIEW.—

"a. In any proceeding under this Act, for the granting, suspending, revoking, or amending of any license or construction permit, or application to transfer control, and in any proceeding for the issuance or modification of rules and regulations dealing with the activities of licensees, and in any proceeding for the payment of compensation, an award, or royalties under sections 153, 157, 186 c., or 188, the Comission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding. The Comission shall hold a hearing after thirty days' notice and publication once in the Federal Register, on each application under section 103 or 104 b. for a construction permit for a facility, and on any application under section 104 c. for a construction permit for a testing facility. In cases where such a construction permit has been issued following the holding of such a hearing, the Commission may, in the absence of a request therefor by any

person whose interest may be affected, issue an operating license or an amendment to a construction permit or an amendment to an operating license without a hearing, but upon thirty days' notice and publication once in the Federal Register of its intent to do so. The Commission may dispense with such thirty days' notice and publication with respect to any application for an amendment to a construction permit or an amendment to an operating license upon a determination by the Commission that the amendment involves no significant hazards consideration.

"b. Any final order entered in any proceeding of the kind specified in subsection a. above shall be subject to judicial review in the manner prescribed in the Act of December 29, 1950, as amended (ch. 1189, 64 Stat. 1129), and to the provisions of section 10 of the Administrative Procedure Act, as amended.

"SEC. 190. LICENSEE INCIDENT REPORTS.—No report by any licensee of any incident arising out of or in connection with a licensed activity made pursuant to any requirement of the Commission shall be admitted as evidence in any suit or action for damages growing out of any matter mentioned in such report.

"SEC. 191. ATOMIC SAFETY AND LICENSING BOARD.—

"a. Notwithstanding the provisions of sections 7(a) and 8(a) of the Administrative Procedure Act, the Commission is authorized to establish one or more atomic safety and licensing boards, each comprised of three members, one of whom shall be qualified in the conduct of administrative proceedings and two of whom shall have such technical or other qualifications as the Commission deems appropriate to the issues to be decided, to conduct such hearings as the Commission may direct and make such intermediate or final decisions as the Commission may authorize with respect to the granting, suspending, revoking or amending of any license or authorization under the pro-

visions of this Act, any other provision of law, or any regulation of the Commission issued thereunder. The Commission may delegate to a board such other regulatory functions as the Commission deems appropriate. The Commission may appoint a panel of qualified persons from which board members may be selected.

"b. Board members may be appointed by the Commission from private life, or designated from the staff of the Commission or other Federal agency. Board members appointed from private life shall receive a per diem compensation for each day spent in meetings or conferences, and all members shall receive their necessary traveling or other expenses while engaged in the work of a board. The provisions of section 163 shall be applicable to board members appointed from private life.

"SEC. 192. TEMPORARY OPERATING LICENSE.—

"a. In any proceeding upon an application for an operating license for a nuclear power reactor, in which a hearing is otherwise required pursuant to section 189 a., the applicant may petition the Commission for a temporary operating license authorizing operation of the facility pending final action by the Commission on the application. Such petition may be filed at any time after filing of: (1) the report of the Advisory Committee on Reactor Safeguards required by subsection 182 b.; (2) the safety evaluation of the application by the Commission's regulatory staff; and (3) the regulatory staff's final detailed statement on the environmental impact of the facility prepared pursuant to section 102(2) (C) of the National Environmental Policy Act of 1969 (83 Stat. 853) or, in the case of an application for operating license filed on or before September 9, 1971, if the regulatory staff's final detailed statement required under section 102(2) (C) is not completed, the Commission must satisfy the applicable requirements of the National Environmental Policy Act prior to issuing any temporary operating license under this section 192.

The petition shall be accompanied by an affidavit or affidavits setting forth the facts upon which the petitioner relies to justify issuance of the temporary operating license. Any party to the proceeding may file affidavits in support of, or opposition to, the petition within fourteen days after the filing of such petition, or within such additional time not to exceed ten days as may be fixed by the Commission. The Commission shall hold a hearing after ten days' notice and publication once in the Federal Register on any such petition and supporting material filed under this section and the decision of the Commission with respect to the issuance of a temporary operating license following such hearing, shall be on the basis of findings on the matters specified in subsection b. of this section. The hearing required by this section and the decision of the Commission on the petition shall be conducted with expedited procedures as the Commission may by rule, regulation, or order deem appropriate for a full disclosure of material facts on all substantial issues raised in connection with the proposed temporary operating license.

"b. With respect to any petition filed pursuant to subsection a. of this section, the Commission shall issue a temporary operating license upon finding that:

"(1) the provisions of section 185 have been met with respect to the temporary operating license;

"(2) operation of the facility during the period of the temporary operating license in accordance with its terms and conditions will provide adequate protection of the environment during the period of the temporary operating license; and

"(3) operation of the facility in accordance with the terms and conditions of the temporary operating license is essential toward insuring that the power generating capacity of a utility system or power pool is at, or is restored to, the levels required to assure the adequacy and reliability of the power supply, taking into consideration

factors which include, but need not be limited to, alternative available sources of supply, historical reserve requirements for the systems involved to function reliably, the possible endangerment to the public health and safety in the event of power shortages, and data from appropriate Federal and State governmental bodies which have official responsibility to assure an adequate and reliable power supply. The temporary license shall contain such terms and conditions as the Commission may deem necessary, including the duration of the license and any provision for the extension thereof, and the requirement that the license not retire or dismantle any of its existing generating capacity on the ground of the availability of the capacity from the facility which is operating under the temporary license. Any decision or other document authorizing the issuance of any temporary license pursuant to this section shall recite with specificity the reasons justifying the issuance. The decision of the Commission with respect to the issuance of a temporary operating license shall be subject to judicial review pursuant to the Act of December 29, 1950, as amended (ch. 1189, 64 Stat. 1129).

"c. The hearing on the application for the final operating license otherwise required pursuant to section 189 a. shall be concluded as promptly as practicable. The Commission shall vacate the temporary operating license if it finds that the applicant is not prosecuting the application for the final operating license with due diligence. Issuance of a temporary operating license pursuant to subsection b. of this section shall be without prejudice to the position of any party to the proceeding in which a hearing is otherwise required pursuant to section 189 a.: and failure to assert any ground for denial or limitation of a temporary operating license shall not bar the assertion of such ground in connection with the issuance of a subsequent final operating license.

"d. The authority under this section shall expire on October 30, 1973.

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Energy Reorganization Act of 1974 42 U.S.C. §§ 5801 *et seq.*

AN ACT

To reorganize and consolidate certain functions of the Federal Government in a new Energy Research and Development Administration and in a new Nuclear Regulatory Commission in order to promote more efficient management of such functions.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Energy Reorganization Act of 1974".

DECLARATION OF PURPOSE

SEC. 2. (2) The Congress hereby declares that the general welfare and the common defense and security require effective action to develop, and increase the efficiency and reliability of use of, all energy sources to meet the needs of present and future generations, to increase the productivity of the national economy and strengthen its position in regard to international trade, to make the Nation self-sufficient in energy, to advance the goals of restoring, protecting, and enhancing environmental quality, and to assure public health and safety.

(b) The Congress finds that, to best achieve these objectives, improve Government operations, and assure the coordinated and effective development of all energy sources, it is necessary to establish an Energy Research and Development Administration to bring together and direct Federal activities relating to research and development on the various sources of energy, to increase the efficiency and reliability in the use of energy, and to carry out the performance of other functions, including but not limited to

the Atomic Energy Commission's military and production activities and its general basic research activities. In establishing an Energy Research and Development Administration to achieve these objectives, the Congress intends that all possible sources of energy be developed consistent with warranted priorities.

(c) The Congress finds that it is in the public interest that the licensing and related regulatory functions of the Atomic Energy Commission be separated from the performance of the other functions of the Commission, and that this separation be effected in an orderly manner, pursuant to this Act, assuring adequacy of technical and other resources necessary for the performance of each.

(d) The Congress declares that it is in the public interest and the policy of Congress that small business concerns be given a reasonable opportunity to participate, insofar as is possible, fairly and equitably in grants, contracts, purchases, and other Federal activities relating to research, development, and demonstration of sources of energy efficiency, and utilization and conservation of energy. In carrying out this policy, to the extent practicable, the Administrator shall consult with the Administrator of the Small Business Administration.

(e) Determination of priorities which are warranted should be based on such considerations as power-related values of an energy source, preservation of material resources, reduction of pollutants, export market potential (including reduction of imports), among others. On such a basis, energy sources warranting priority might include, but not be limited to, the various methods of utilizing solar energy.

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TITLE II—NUCLEAR REGULATORY COMMISSION

ESTABLISHMENT AND TRANSFERS

SEC. 201. (a) There is established an independent regulatory commission to be known as the Nuclear Regulatory Commission which shall be composed of five members, each of whom shall be a citizen of the United States. The President shall designate one member of the Commission as Chairman thereof to serve as such during the pleasure of the President. The Chairman may from time to time designate any other member of the Commission as Acting Chairman during his absence. The Chairman (or the Acting Chairman in the absence of the Chairman) shall preside at all meetings of the Commission and a quorum for the transaction of business shall consist of at least three members present. Each member of the Commission, including the Chairman, shall have equal responsibility and authority in all decisions and actions of the Commission, shall have full access to all information relating to the performance of his duties or responsibilities, and shall have one vote. Action of the Commission shall be determined by a majority vote of the members present. The Chairman (or Acting Chairman in the absence of the Chairman) shall be the official spokesman of the Commission in its relations with the Congress, Government agencies, persons, or the public, and, on behalf of the Commission, shall see to the faithful execution of the policies and decisions of the Commission, and shall report thereon to the Commission from time to time as the Commission may direct. The Commission shall have an official seal which shall be judicially noticed.

(b)(1) Members of the Commission shall be appointed by the President, by and with the advice and consent of the Senate.

(2) Appointments of members pursuant to this subsection shall be made in such a manner that not more than

three members of the Commission shall be members of the same political party.

(c) Each member shall serve for a term of five years, each such term to commence on July 1, except that of the five members first appointed to the Commission, one shall serve for one year, one for two years, one for three years, one for four years, and one for five years, to be designated by the President at the time of appointment.

(d) Such initial appointments shall be submitted to the Senate within sixty days of the signing of this Act. Any individual who is serving as a member of the Atomic Energy Commission at the time of the enactment of this Act, and who may be appointed by the President to the Commission, shall be appointed for a term designated by the President, but which term shall terminate not later than the end of his present term as a member of the Atomic Energy Commission, without regard to the requirements of subsection (b)(2) of this section. Any subsequent appointment of such individuals shall be subject to the provisions of this section.

(e) Any member of the Commission may be removed by the President for inefficiency, neglect of duty, or malfeasance in office. No member of the Commission shall engage in any business, vocation, or employment other than that of serving as a member of the Commission.

(f) There are hereby transferred to the Commission all the licensing and related regulatory functions of the Atomic Energy Commission, the Chairman and members of the Commission, the General Counsel, and other officers and components of the Commission—which functions, officers, components, and personnel are excepted from the transfer to the Administrator by section 104(c) of this Act.

(g) In addition to other functions and personnel transferred to the Commission, there are also transferred to the Commission—

(1) the functions of the Atomic Safety and Licensing Board Panel and the Atomic Safety and Licensing Appeal Board;

(2) such personnel as the Director of the Office of Management and Budget determines are necessary for exercising responsibilities under section 205, relating to, research, for the purpose of confirmatory assessment relating to licensing and other regulation under the provisions of the Atomic Energy Act of 1954, as amended, and of this Act.

LICENSING AND RELATED REGULATORY FUNCTIONS RESPECTING SELECTED ADMINISTRATION FACILITIES

SEC. 202. Notwithstanding the exclusions provided for in section 110 a. or any other provisions of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2140(a)), the Nuclear Regulatory Commission shall, except as otherwise specifically provided by section 110 b. of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2140(b)), or other law, have licensing and related regulatory authority pursuant to chapters 6, 7, 8, and 10 of the Atomic Energy Act of 1954, as amended, as to the following facilities of the Administration:

(1) Demonstration Liquid Metal Fast Breeder reactors when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(2) Other demonstration nuclear reactors—except those in existence on the effective date of this Act—when operated as part of the power generation facilities of any electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(3) Facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from activities licensed under such Act.

(4) Retrievable Surface Storage Facilities and other facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive waste generated by the Administration, which are not used for, or are part of, research and development activities.

OFFICE OF NUCLEAR REGULATION

SEC. 203. (a) There is hereby established in the Commission an Office of Nuclear Reactor Regulation under the direction of a Director of Nuclear Reactor Regulation, who shall be appointed by the Commission, who may report directly to the Commission, as provided in section 209, and who shall serve at the pleasure of and be removable by the Commission.

(b) Subject to the provisions of this Act, the Director of Nuclear Reactor Regulation shall perform such functions as the Commission shall delegate including:

(1) Principal licensing and regulation involving all facilities, and materials licensed under the Atomic Energy Act of 1954, as amended, associated with the construction and operation of nuclear reactors licensed under the Atomic Energy Act of 1954, as amended;

(2) Review the safety and safeguards of all such facilities, materials, and activities, and such review functions shall include, but not be limited to—

(A) monitoring, testing and recommending upgrading of systems designed to prevent substantial health or safety hazards; and

(B) evaluating methods of transporting special nuclear and other nuclear materials and of transporting and storing high-level radioactive wastes to prevent radiation hazards to employees and the general public.

(3) Recommend research necessary for the discharge of the functions of the Commission.

(c) Nothing in this section shall be construed to limit in any way the functions of the Administration relating to the safe operation of all facilities resulting from all activities within the jurisdiction of the Administration pursuant to this Act.

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

SEC. 204. (a) There is hereby established in the Commission an Office of Nuclear Material Safety and Safeguards under the direction of a Director of Nuclear Material Safety and Safeguards, who shall be appointed by the Commission, who may report directly to the Commission as provided in section 209, and who shall serve at the pleasure of and be removable by the Commission.

(b) Subject to the provisions of this Act, the Director of Nuclear Material Safety and Safeguards shall perform such functions as the Commission shall delegate, including:

(1) Principal licensing and regulation involving all facilities and materials, licensed under the Atomic Energy Act of 1954, as amended, associated with the processing, transport, and handling of nuclear materials, including the provision and maintenance of safeguards against threats, thefts, and sabotage of such licensed facilities, and materials.

(2) Review safety and safeguards of all such facilities and materials licensed under the Atomic Energy Act of 1954, as amended, and such review shall include, but not be limited to—

(A) monitoring, testing, and recommending upgrading of internal accounting systems for special nuclear and other nuclear materials licensed under the Atomic Energy Act of 1954, as amended;

(B) developing, in consultation and coordination with the Administration, contingency plans for dealing with threats, thefts, and sabotage relating to special nuclear ma-

terials, high-level radioactive wastes and nuclear facilities resulting from all activities licensed under the Atomic Energy Act of 1954, as amended;

(C) assessing the need for, and the feasibility of, establishing a security agency within the office for the performance of the safeguards functions, and a report with recommendations on this matter shall be prepared within one year of the effective date of this Act and promptly transmitted to the Congress by the Commission.

(3) Recommending research to enable the Commission to more effectively perform its functions.

(c) Nothing in this section shall be construed to limit in any way the functions of the Administration relating to the safeguarding of special nuclear materials, high-level radioactive wastes and nuclear facilities resulting from all activities within the jurisdiction of the Administration pursuant to this Act.

OFFICE OF NUCLEAR REGULATORY RESEARCH

SEC. 205. (a) There is hereby established in the Commission and Office of Nuclear Regulatory Research under the direction of a Director of Nuclear Regulatory Research, who shall be appointed by the Commission, who may report directly to the Commission as provided in section 209, and who shall serve at the pleasure of and be removable by the Commission.

(b) Subject to the provisions of this Act, the Director of Nuclear Regulatory Research shall perform such functions as the Commission shall delegate including:

(1) Developing recommendations for research deemed necessary for performance by the Commission of its licensing and related regulatory functions.

(2) Engaging in or contracting for research which the Commission deems necessary for the performance of its licensing and related regulatory functions.

(c) The Administrator of the Administration and the head of every other Federal agency shall—

(1) cooperate with respect to the establishment of priorities for the furnishing of such research services as requested by the Commission for the conduct of its functions;

(2) furnish to the Commission, on a reimbursable basis, through their own facilities or by contract or other arrangement, such research services as the Commission deems necessary and requests for the performance of its functions; and

(3) consult and cooperate with the Commission on research and development matters of mutual interest and provide such information and physical access to its facilities as will assist the Commission in acquiring the expertise necessary to perform its licensing and related regulatory functions.

(d) Nothing in subsections (a) and (b) of this section or section 201 of this Act shall be construed to limit in any way the functions of the Administration relating to the safety of activities within the jurisdiction of the Administration.

(e) Each Federal agency, subject to the provisions of existing law, shall cooperate with the Commission and provide such information and research services, on a reimbursable basis, as it may have or be reasonably able to acquire.

NONCOMPLIANCE

SEC. 206. (a) Any individual director, or responsible officer of a firm constructing, owning, operating, or supplying the components of any facility or activity which is licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954 as amended, or pursuant to this Act, who obtains information reasonably indicating that such

facility or activity or basic components supplied to such facility or activity—

(1) fails to comply with the Atomic Energy Act of 1954, as amended, or any applicable rule, regulation, order, or license of the Commission relating to substantial safety hazards, or

(2) contains a defect which would create a substantial safety hazard, as defined by regulations which the Commission shall promulgate, shall immediately notify the Commission of such failure to comply, or of such defect, unless such person had actual knowledge that the Commission has been adequately informed of such defect or failure to comply.

(b) Any person who knowingly and consciously fails to provide the notice required by subsection (a) of this section shall be subject to a civil penalty in an amount equal to the amount provided by section 234 of the Atomic Energy Act of 1954, as amended.

(c) The requirements of this section shall be prominently posted on the premises of any facility licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954, as amended.

(d) The Commission is authorized to conduct such reasonable inspections and other enforcement activities as needed to insure compliance with the provisions of this section.

NUCLEAR ENERGY CENTER SITE SURVEY

SEC. 207. (a)(1) The Commission is authorized and directed to make or cause to be made under its direction, a national survey, which shall include consideration of each of the existing or future electric reliability regions, or other appropriate regional areas, to locate and identify possible nuclear energy center sites. This survey shall be conducted in cooperation with other interested Federal,

State, and local agencies, and the views of interested persons, including electric utilities, citizens' groups, and others, shall be solicited and considered.

(2) For purposes of this section, the term "nuclear energy center site" means any site, including a site not restricted to land, large enough to support utility operations or other elements of the total nuclear fuel cycle, or both including, if appropriate, nuclear fuel reprocessing facilities, nuclear fuel fabrication plants, retrievable nuclear waste storage facilities, and uranium enrichment facilities.

(3) The survey shall include—

(a) a regional evaluation of natural resources, including land, air, and water resources, available for use in connection with nuclear energy center sites; estimates of future electric power requirements that can be served by each nuclear energy center site; an assessment of the economic impact of each nuclear energy site; and consideration of any other relevant factors, including but not limited to population distribution, proximity to electric load centers and to other elements of the fuel cycle, transmission line rights-of-way, and the availability of other fuel resources;

(b) an evaluation of the environmental impact likely to result from construction and operation of such nuclear energy centers, including an evaluation whether such nuclear energy centers will result in greater or lesser environmental impact than separate siting of the reactors and/or fuel cycle facilities; and

(c) consideration of the use of federally owned property and other property designated for public use, but excluding national parks, national forests, national wilderness areas, and national historic monuments.

(4) A report of the results of the survey shall be published and transmitted to the Congress and the Council on Environmental Quality not later than one year from the

date of the enactment of this Act and shall be made available to the public, and shall be updated from time to time thereafter as the Commission, in its discretion, deems advisable. The report shall include the Commission's evaluation of the results of the survey and any conclusions and recommendations, including recommendations for legislation, which the Commission may have concerning the feasibility and practicality of locating nuclear power reactors and/or other elements of the nuclear fuel cycle or nuclear energy center sites. The Commission is authorized to adopt policies which will encourage the location of nuclear power reactors and related fuel cycle facilities on nuclear energy center sites insofar as practicable.

ABNORMAL OCCURRENCE REPORTS

SEC. 208. The Commission shall submit to the Congress each quarter a report listing for that period any abnormal occurrences at or associated with any facility which is licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954 as amended, or pursuant to this Act. For the purposes of this section an abnormal occurrence is an unscheduled incident or event which the Commission determines is significant from the standpoint of public health or safety. Nothing in the preceding sentence shall limit the authority of a court to review the determination of the Commission. Each such report shall contain—

(1) the date and place of each occurrence;

(2) the nature and probable consequence of each occurrence;

(3) the cause or causes of each; and

(4) any action taken to prevent reoccurrence; the Commission shall also provide as wide dissemination to the public of the information specified in clauses (1) and (2) of this section as reasonably possible within fifteen days of its receiving information of each abnormal occurrence and

shall provide as wide dissemination to the public as reasonably possible of the information specified in clauses (3) and (4) as soon as such information becomes available it.

OTHER OFFICERS

SEC. 209. (a) The Commission shall appoint an Executive Director for Operations, who shall serve at the pleasure of and be removable by the Commission.

(b) The Executive Director shall perform such functions as the Commission may direct, except that the Executive Director shall not limit the authority of the director of any component organization provided in this Act to communicate with or report directly to the Commission when such director of a component organization deems it necessary to carry out his responsibilities.

(c) There shall be in the Commission not more than five additional officers appointed by the Commission. The positions of such officers shall be considered career positions and be subject to subsection 161 d. of the Atomic Energy Act.

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DEFINITIONS

SEC. 304. As used in this Act—

(1) any reference to "function" or "functions" shall be deemed to include references to duty, obligation, power, authority, responsibility, right, privilege, and activity, or the plural thereof, as the case may be; and

(2) any reference to "perform" or "performance", when used in relation to functions, shall be deemed to include the exercise of power, authority, rights, and privileges.

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National Environmental Policy Act of 1969, 42 U.S.C. § 4332

SECTION 102. The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall—

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as prprovided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) Any detailed statement required under subparagraph (C) after January 1 ,1970, for any major Federal action funded under a program of grants to States shall not be deemed to be legally insufficient solely by reason of having been prepared by a State agency or official, if:

(i) the State agency or official has statewide jurisdiction and has the responsibility for such action,

(ii) the responsible Federal official furnishes guidance and participates in such preparation,

(iii) the responsible Federal official independently evaluates such statement prior to its approval and adoption, and

(iv) after January 1, 1976, the responsible Federal official provides early notification to, and solicits the views of, any other State or any Federal land management entity of any action or any alternative thereto which may have significant im-

pacts upon such State or Federal land management entity and, if there is any disagreement on such impacts, prepares a written assessment of such impacts and views for incorporation into such detailed statement.

The procedures in this subparagraph shall not relieve the Federal official of his responsibilities for the scope, objectivity, and content of the entire statement or of any other responsibility under this Act; and further, this subparagraph does not affect the legal sufficiency of statements prepared by State agencies with less than statewide jurisdictions.

(E) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(F) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(G) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancng the quality of the environment;

(H) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(I) assist the Council on Environmental Quality established by title II of this Act.